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The Efficiency of Oregon School Children in the Tool Subjects

AS SHOWN BY STANDARD TESTS

BY

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A STATEMENT OF THE PROBLEM

In the school year of 1918-19, the Bureau of Educational Research of the University of Oregon undertook, in a co-operative way with the schools of the state, the problem of determining the efficiency of Oregon school children in some of the tool subjects. The work was confined primarily to the grades from the third to the eighth inclusive. Some testing was done, however, in the subjects of reading and algebra in the high schools, but no attempt was made to especially feature this phase of the work and comparatively little testing was done in those high school subjects.

Subjects in Which Testing Was Done. In the grades the children were tested in arithmetic, language and grammar, spelling, reading and handwriting. Work in the first four subjects was especially featured, but tests in handwriting were made a special feature of the work in one locality of the state, namely, Jackson county.

Nature of Work. The work was carried on in a co-operative way in order to add the additional interest and stimulus that would come as a result of comparing the work of the various schools. The Bureau of Educational Research was made a clearing house where the data were collected, compiled and comparisons made. The testing material was sent out by the University to those schools who wished to undertake the co-operative problem. Eleven cities of the first class (cities having a school population of 1,000 or more school children) did some or all of the testing, and nine of these cities sent in their material to the University to be compiled. Fifteen districts of the second class (those having a school population of from 200 to 1,000) did the testing, and about one hundred villages of the third class (districts with less than 200 pupils) and rural schools submitted their data.

It was planned to have the testing done in the months of January and February but, owing to the fact that many of the schools were closed because of the influenza, much of the work was postponed until later in the year. Instructions were sent out from the University as to the method of giving the tests and tabulating the data. In most of the first and second class districts the tests were given under the personal direction of someone sent out from the University.

Early in the year plans were formulated for, at least, two counties of the state to test all their schools including districts of the first, second or third classes, in the hope that county superintendents might use the data from the tests as supervisory instruments for the better administration of their school work. Owing to the fact that the schools were forced to close their doors for a number of weeks, complete returns came in from Jackson county only, which returns constitute the first part of this bulletin.

Tests Used. The Courtis tests in the four fundamentals and the Stone Reasoning tests were used in arithmetic. The Kansas Silent Reading tests devised by Dr. F. J. Kelly were used to test the reading. Language and grammar tests used were devised by C. A. Gregory, of the University of Oregon; the Gettysburg Edition of the Ayers Writing Scale was used to test the handwriting, and the Monroe Algebra tests were used in algebra.

The following districts did the testing:

Cities of the First Class

Newberg	Eugene	Roseburg
McMinnville	Medford	Astoria
The Dalles	Ashland	Baker

Cities of the Second Class *

Estacada	Lebanon	Tillamook
Seaside	Ontario	Milton
Myrtle Point	Heppner	Hermiston
North Bend	Hillsboro	Clatskanie
Central Point	Enterprise	Silverton

Cities of the Third Class *

Eagle Point	Umapine	Gold Hill
Butte Falls	Westland	Adams
Jacksonville	Waseo	Umatilla
Phoenix	Marcola	Mill City
Rogue River	Glendale	
Athena	Pilot Rock	

*Districts of second and third classes were determined from the number of pupils in attendance 1918-19 rather than from school population.

In addition to these, returns from about 80 rural schools from Jackson county were sent in. In comparing the data, schools are recorded by number rather than by name. In general, they are divided into four classes, districts of the first class, those of the second class, those graded schools of the third class, and the rural schools.

THE SCHOOLS OF JACKSON COUNTY

Jackson county has two districts of the first class that are designated as city schools, eight town schools (districts of the second and third class) and 76 rural schools.

The rural schools are divided into nine sections, each section containing from five to thirteen rural schools, as follows:

Antioch, consisting of school districts number 11, 18, 20, 36, 37, 41, 47, 50, 52 and 44.

Applegate, consisting of Nos. 3, 27, 33, 34, 43, 68, 77, 82 and 87.

Dardanelles, composed of Nos. 17, 32, 61, 88 and 98.

Howard, consisting of districts 10, 14, 15, 24, 29, 95, 99 and 100.

Neil Creek, consisting of districts 7, 38S, 38PR, 54, 60SS, 60GS, 72, 92, 94 and 97.

Trail, consisting of Nos. 28, 31, 45, 53, 59, 63, 66, 74, 84, 86B, 86H, 89 and 93.

Wellen, consisting of districts 12, 13, 19, 39, 42, 51, 65, 76, 81 and 90.

Wimer, consisting of districts 48, 62W, 62PG, 79 and 101.

The two-room schools also constitute another section. They consist of districts number 2, 16, 40, 56, 69 and 73.

County Superintendent G. W. Ager has in his files the individual record of each child in the county. The rural schools were grouped according to the above grouping because of their location and because each of the groups constituted a unit for administrative purposes.

Tests in Arithmetic

The Courtis tests in arithmetic consist of a series of problems in addition, subtraction, multiplication and division. The following, taken from Form I, Series B, illustrates the nature of the problems:

Addition	Subtraction	Multiplication	Division
927	107795491	8246	
379	77197029	73	25) 6775
756			
837	Time, 4 min.	Time, 6 min.	Time, 8 min.
929			
110			
854			
965			
344			

Time, 8 min.

Each sheet contains one test in each of the four fundamentals. The instructions at the top of the test paper read, "You will be given.....minutes to find the answers to as many of these examples as possible. Write the answers on this paper directly underneath the examples. You are not expected to be able to do them all. You will be marked for both speed and accuracy, but it is more important to have your answers right than to try a great many examples."

Tables 1 to 44 record the speed and accuracy for grades 3 to 8 inclusive. Table 1 is read as follows: The letters and figures at the top A, B, C, D, 5, etc., represent the various schools. The letters preceding the figure 5 represent the ward buildings, while the figures under column 5 represent the record for the entire city. Column 6 represents the grade for the entire city, while columns E and F are ward buildings in this city. The numbers and letters used here are used throughout the entire bulletin. The record is read thus: School A had 1 pupil who attempted 2 problems, 2 who attempted 3, 2 who attempted 5, 1 who attempted 6, and 1 who attempted 7. The median score for the school A is 5.5 problems. A median may be defined as that point which is equalled or excelled by 50 per cent of the cases, or it is the middlemost point in an array of figures arranged according to their ascending or descending values and means in this case that there were just as many pupils who solved 5.5 or less as there were who solved that number or more. The methods for solving the medians are not always uniform. It is, therefore, necessary to state the methods used in this bulletin. In the arithmetic the method is as follows: If there are, for instance, 37 papers in the class the median is the grade on the 19th paper. If there are 36 in the class the median is the grade on the 18th paper. In the language and grammar and silent reading papers the median is the same as in arithmetic if there is an odd number of papers and if an even number, it is half way between the grade on the two middlemost papers.

SPEED **TABLE 1** **ADDITION** **GRADE 3**

No. of examples attempted	A	B	C	D	5	E	F	6	14	25	26	27	28	29	30	35	37	38	39	40	41	42	43	44	45	Total
0		0					0				0		0				1									1
1		0	1		1	1	0	1			0		0		1											3
2	1	0	2	5	9	1	0	1			0	1	0	3	3					1	2	1	2			23
3	2	0	3	3	8	6	0	6	1		0	2	0		2	1	5	2	2	1	3	1				34
4		0	2	1	3	10	0	10	2	3	0	3	0	1	1		4	4		2	1	4		2	1	41
5	2	0	1	1	4	7	0	7	2	1	0	3	0	1	1	2	3	1	2	7	1	3	2	4	6	50
6	1	0	1		2	7	0	7	3	3	0	2	0			5	2	3	1	5	1			2	2	38
7	1	0		1	2	1	0	1	1	1	0		0		1				1	1				1	1	10
8		0		1	1		0		2	1	0	1	0					1		1	1				1	9
9		0					0				0		0													
10		0					0				0	1	0													1
11		0					0				0		0													
12		0					0				0		0													
13		0					0				0		0													
14		0					0				0		0													
15		0					0				0		0													
16		0					0				0		0													
17		0					0				0		0													
18		0					0				0		0													
19		0					0				0		0													
20		0					0				0		0													
21		0					0				0		0													
22		0					0				0		0													
23		0					0				0		0													
24		0					0				0		0													
Total	7	0	10	13	30	33	0	33	11	9	0	13	0	5	9	8	15	11	6	18	9	9	4	9	11	210
Median Score	5.5	0	3.5	3.3	3.6	4.9	0	4.9	6.1	6.3	0	5.3	0	3.	3.5	5.2	4.5	5.	6.5	5.7	4.	4.7	3.	4.7	5.8	5.1

SPEED **TABLE 2** **ADDITION** **GRADE 4**

No. of examples attempted	A	B	C	D	5	E	F	6	14	25	26	27	28	29	30	36	37	38	39	40	41	42	43	44	45	Total
0	0																									
1	0																						1			1
2	0	2	5	2	9	4	3	7							1				1	1		1				20
3	0	1	5	2	8	8	3	11							2			2				1				24
4	0	2	4	4	10	10	10	20	1			1			2		4		1	2	2	1	2	2	2	50
5	0	5	16	2	23	9	9	18	1	2	2	2			2	1	1	5	2	4	2	1	2	1		69
6	0	3	5		8	6	9	15	1	1	1	2	3	2	4	2		1	2	1	2	4	1	2	1	53
7	0	1	3		4	3	6	9	2		1	2	1	1		2	1		2	2	3	1	1	1	1	34
8	0			1	1	2	3	5		2		1		1	3	3	5	2		2	2				1	28
9	0						1	1	5	1				4	2	2	1	3							1	20
10	0		1		1											1	2								2	6
11	0						1	1									1	1								3
12	0																									
13	0																									
14	0								1																1	2
15	0																									
16	0																									
17	0																									
18	0																									
19	0																									
20	0																									
21	0																									
22	0																									
23	0																									
24	0																									
Total Att.:		14	39	11	64	42	45	87	11	6	4	8	4	8	16	11	15	14	8	12	11	9	7	6	9	310
Median Score:		5.4	5.3	4.5	5.2	4.9	5.7	5.3	9.2	7.	6.	6:5	6.6	8.	6.2	7.3	7.4	5.	6.	5.7	7.	5.2	5.6	6.	9.	5.9

SPEED — TABLE 3 — ADDITION — GRADE 5

No. of examples attempted	A	B	C	D	5	E	F	6	14	25	26	27	28	29	30	36	37	38	39	40	41	42	43	44	45	Total
0																										
1																										
2		2	1		3	2		2									1				2					8
3	5	3	4		12		3	3	1	1		1	1				1		1		1	1	1		1	25
4	4	2	8		14	5	11	16	3	2		1	1	4	3		1	1	1		2	1	2	1	1	54
5	2	1	13	1	17	5	3	8	4	1		3	2		1		2		1	1		1	2		1	44
6	5	3	11	1	20	6	11	17	5	3		3	1	2	5		2	5	2	6		4	2		3	80
7	6		4	1	11	3	5	8	3	1	2		3	1	3		3		3	2	2	2	2	1	2	49
8	3		8	4	15	1	4	6	3		1		1		1	1	6	1		1			1		1	37
9	1		1	3	5		1	1			3			2		1	1	1			1	1	3			19
10	1		6	3	9	1		1	1							2				2	1			1	2	19
11			1		1						1			1		1	1							1	2	8
12				1	1											1	1								1	4
13			1	4	5	1		1																		6
14				2	2																					2
15				2	2																					2
16			1		1																					1
17				2	2																					2
18																										
19				2	2																					2
20																										
21																										
22																										
23				1	1																					1
24																										
Total Att.:	27	11	58	27	123	24	38	62	20	8	7	8	9	10	13	6	19	8	8	12	9	10	13	4	14	363
Median Score:	6.6	4.5	6.2	13.	6.8	6.	6.1	6.1	6.4	6.	8.3	5.6	7.	5.5	6.6	10.6	8.	6.6	5.2	5.8	5.	6.5	6.6	8.	7.6	6.9

SPEED — TABLE 4 — ADDITION — GRADE 6

No. of examples attempted	A	B	C	D	5	E	F	6	14	26	26	27	28	29	30	36	37	38	39	40	41	42	43	44	45	Total
0											0															
1											0															
2	1				1						0															1
3	3		1		4		1	1			0		1				1			1				1		9
4	2	1		1	4	1	1	2			0			1	1			1					2	1	1	13
5	8	2	4	6	20	7	2	9			0			1			2	2		1		3	1			39
6	8	4	4	2	18	4	8	12	3		0	1	1	1	2	1	1		1	1	2	2	1	2	2	51
7	2	2	7	2	13	6	8	14		3	0	1	2		1		2	1		3	1	2	1		5	48
8	3	1	8	6	18	11	5	16	3	1	0	1	2	1	1		1	4	2	4	2	4	1	2	7	70
9	1		3	1	5	3	4	7	2		0	2			1	3	1	1	4	2				3	1	32
10			2		2	2	1	3	2		0				1	1	1	3		4				3	2	22
11	1		1		2	2	1	3	1	2	0					1			2	2		1		1	1	16
12									1		9							1								2
13							1	1			0					1				1	2					5
14											0															
15									1		0															1
16											0															
17											0							3								3
18											0					1										1
19											0															
20											0															
21											0															
22											0															
23											0															
24									1		0															1
Total Att.:	29	10	30	18	87	36	32	68	14	6	0	5	5	4	7	8	9	16	9	19	7	12	6	13	19	314
Median Score:	6.1	6.5	6.8	7.	6.8	8.	7.5	7.7	9.5	8.	0	9.	7.	6.	8.	9.	7.5	8.	8.6	8.	7.5	7.5	6.	9.3	8.2	7.9

SPEED — TABLE 5 — ADDITION — GRADE 7

No. of examples attempted	A	B	C	D	5	E	F	6	14	25	26	27	28	29	30	36	37	38	39	40	41	42	43	44	45	Total
0	0	0					0																			
1	0	0				1	0	1																		1
2	0	0	1		1	1	0	1																		2
3	0	0				5	0	5																		5
4	0	0	4		4	9	0	9			1	1														15
5	0	0	6		6	12	0	12				1	3	2		1		1	1		1		2	1	1	32
6	0	0	6	3	9	18	0	18	2		1	2	1	1		1	2	2				2				41
7	0	0	8	2	10	9	0	9	5			1	4	1	1	2	1		2	3	4		4		2	49
8	0	0	10	10	20	13	0	13	4	3	1	1	2		1	1	1	3		3	2	4		2	3	54
9	0	0	6	8	14	9	0	9	5			1	3		2			5	1	2	1		1	1	6	51
10	0	0	4	11	15	7	0	7	1			1	1		1		2	2	2	2	1	1			3	49
11	0	0	3	2	5	3	0	3	2			1			4		1	2		3			1		2	24
12	0	0		3	3	1	0	1		2		1	1		2		1	1			1			1		14
13	0	0		1	1	2	0	2			1															6
14	0	0		1	1		0								2											3
15	0	0					0					1						1		1						3
16	0	0	1		1		0		1									1								3
17	0	0					0													1						1
18	0	0					0																			
19	0	0					0																			
20	0	0		1	1		0																			1
21	0	0					0																			
22	0	0					0																			
23	0	0					0																			
24	0	0					0																			
Total Att.:	0	0	49	42	91	90	0	90	20	5	4	11	15	4	13	5	8	18	6	15	10	7	8	5	17	352
Median Score:	0	0	8.	9.7	8.8	6.9	0	6.9	8.7	9.	7.	8.	8.	6.	10.5	7.5	9.	8.6	7.	9.	7.	8.5	7.5	8.	9.5	8.6

SPEED — TABLE 6 — ADDITION — GRADE 8

No. of examples attempted	A	B	C	D	5	E	F	6	14	25	26	27	28	29	30	36	37	38	39	40	41	42	43	44	45	Total
0	0	0					0																			
1	0	0					0																			
2	0	0	1		1	2	0	2															1			4
3	0	0				2	0	2																		2
4	0	0				1	0	1						1		1						1	1			5
5	0	0	2		2	2	0	2									1							1	1	7
6	0	0	13	2	15	9	0	9						3	1	1	1		1		1	1	3	1		37
7	0	0	9	6	15	15	0	15	2			2		2	1		1						2	1	2	43
8	0	0	18	20	38	7	0	7	3	1		1	3	3	4	3	5	1	2	4	1	1	1	1	3	82
9	0	0	9	4	13	1	0	1	4	1	3	2	2	1	2	5	5	2		1		4	1		6	53
10	0	0	4	5	9	5	0	5	1		2	2			4		3		3	1		1			3	34
11	0	0		3	3	2	0	2	2	1		2	3		1		4	1	4	3		1			2	29
12	0	0		1	1	1	0	1				3	3				1	1				2		2		14
13	0	0		2	2	2	0	2				1	3			2				1	1					12
14	0	0		1	1		0			1	1	1										1	1	1		7
15	0	0	1		1		0																			1
16	0	0					0		2									1								3
17	0	0					0			1						1			1							3
18	0	0					0											1								1
19	0	0					0																			
20	0	0					0																			
21	0	0					0																			
22	0	0					0																			
23	0	0					0																			
24	0	0					0																			
Total Att.:	0	0	57	44	101	49	0	49	14	5	6	14	14	10	13	13	21	7	11	10	3	12	10	7	17	337
Median Score:			8.2	8.7	8.4	7.6	0	7.6	9.5	11.	9.	10.	10.6	6.5	8.5	8.4	9.6	12.	11.	10.	8.	9.7	7.	9.	9.5	8.9

ACCURACY TABLE 7 ADDITION GRADE 3

Score in per cent.	A	B	C	D	5	A	B	6	14	25	26	27	28	29	30	36	37	38	39	40	41	42	43	44	45	Total
100		0	2		2				1				0		1											4
90		0											0													
80	1	0			1	2	0	2	1	1	0	3	0						1	1					1	11
70		0				2	9	2	2				0								1					5
60		0	1	2	3	1	0	1	4			1	0					1		1						11
50		0		3	3	3	0	3	2	2	0		0	2	1			2		1	2	1				19
0 to 49	6	0	7	8	21	25	0	25	1	6	0	9	0	3	7	8	15	8	5	15	6	8	4	9	10	160
Total:	7	0	10	13	30	33	0	33	11	9	0	13	0	5	9	8	16	11	6	18	9	9	4	9	11	210
Median Score:	41.6	0	35.5	43.7	35.7	34.	0	34.	67.5	41.6	0	38.8		50.	35.5	25.	26.6	37.5	30.	30.	41.6	31.2	25.	27.7	30.	32.8

ACCURACY TABLE 8 ADDITION GRADE 4

Score in per cent.	A	B	C	D	5	A	B	6	14	25	26	27	28	29	30	36	37	38	39	40	41	42	43	44	45	Total
100		1	1		2	4	3	7					1		1							1	1			13
90																										
80		1	2	1	4	3	6	9	1						2		1			1				1	1	20
70		1	1		2	1	4	5		1		2		1			1	1							1	14
60		5	4	3	12	9	3	12	1	1		2	1	3	2	3				1	2				1	41
50		2	4	4	10	8	6	14		1		1	1	1	2	1	1			2	4	1			1	40
0 to 49		4	27	3	34	17	23	40	9	3	4	3	1	3	9	7	12	13	8	8	5	7	6	5	5	182
Total:		14	39	11	64	42	45	87	11	6	4	8	4	8	16	11	15	14	8	12	11	9	7	6	9	310
Median Score:		62.	36.	57.5	47.	55.	50.	25.8	33.3	50.	25.	60.	60.	60.	44.4	42.8	33.3	26.9	26.	37.5	52.5	35.2	33.3	30.	50.	42.5

ACCURACY TABLE 9 ADDITION GRADE 5

Score in per cent.	A	B	C	D	5	A	B	6	14	25	26	27	28	29	30	36	37	38	39	40	41	42	43	44	45	Total
100	2		3	1	6	4	7	11									1									18
90			2		2																1					3
80	1	1	7	2	11	2	2	4	1	2			1	2	1		1	1	1	1			1	1	2	30
70	3		7	3	13	1	5	6	1	2			1		2	1						1	1	1	2	31
60	4	2	14	6	26	4	6	10	1	1		1	1	3	3	1	1			3		1	1		4	57
50	3	2	4	7	16	5	7	12	3	1			4	2		2	3	1			4	1			3	62
0 to 49	14	6	21	8	49	8	11	19	14	2	7	7	2	3	7	2	13	6	7	8	4	7	10	2	3	172
Total:	27	11	58	27	123	24	38	62	20	8	7	8	9	10	13	6	19	8	8	12	9	10	13	4	14	363
Median Score:	50.	50.	67.8	68.5	58.1	58.	61.6	60.	36.7	70.	28.6	28.5	57.5	60.	50.	55.	38.4	33.3	28.5	37.5	52.5	35.7	35.	50.	62.5	51.9

ACCURACY TABLE 10 ADDITION GRADE 6

Score in per cent.	A	B	C	D	5	A	B	6	14	25	26	27	28	29	30	36	37	38	39	40	41	42	43	44	45	Total
100	4				4	4	3	7						1												11
90						1		1	2										1							4
80	2	2	4	3	11	5	5	10	2				1		3		1	2		3		1	1	2	3	40
70	1	1	2		4	5	3	8	1					2	1	3	1	2	1	1	1			1	2	28
60	5	1	5	1	13	2	3	5						1		1	1	2		4	2	2	1	2	4	38
50	4	1	5	6	15	7	9	16	2				1		1	1	1	2	3	3		2	2	1	5	56
0 to 49	13	5	13	8	39	12	9	21	7	6		5	3		2	3	5	8	4	8	4	7	2	7	5	136
Total:	29	10	30	18	87	36	32	68	14	6		5	5	4	7	8	9	16	9	19	7	12	6	13	19	314
Median Score:	52.5	60.	54.	51.6	53.1	58.5	57.7	54.0	50.	25.		30.	50.	75.	80.	60.	50.	50.	53.3	56.6	50.	42.8	55.	50.	60.	53.7

ACCURACY TABLE 11 ADDITION GRADE 7

Score in per cent.	A	B	C	D	5	A	B	6	14	25	26	27	28	29	30	36	37	38	39	40	41	42	43	44	45	Total
100			3	34	37	12		12	1			1			1											52
90			1	3	4	2		2	1								1				1	1			1	11
80			10	3	13	7		7	1			1	1	1		3		2		2	1		1			33
70			12	2	14	10		10	5		2	1	1	1	3	1		1		2	1	1		1	3	47
60			6		6	12		12	3		1	1	2		4		2	3		3	1				3	41
50			8		8	19		19	1	2		3	4		1	1	1	3	1	5	2	2	1		1	55
0 to 49			9		9	28		28	8	3	1	4	7	2	4		4	9	5	3	4	3	6	4	9	113
Total:			49	42	91	90		90	20	5	4	11	15	4	13	5	8	18	6	15	10	7	8	5	17	352
Median Score:			71.6	100	86.9	58.9		58.9	63.3	50.	70.	55.6	52.5	50.	65.	83.3	50.	50.	30.	60.	55.	55.	33.3	37.5	50.	60.7

ACCURACY TABLE 12 ADDITION GRADE 8

Score in per cent.	A	B	C	D	5	A	B	6	14	25	26	27	28	29	30	36	37	38	39	40	41	42	43	44	45	Total
100			5	38	43	6		6								2	1			1			1			54
90				1	1	2		2				2	1				1	1	1					1	1	11
80			13	5	18	8		8	1	2			3	3	2	3	1	1	1	1	1	2	1	1		49
70			7		7	10		10	2		1	3	3		2	4	2		2	2		4	1		3	46
60			10		10	8		8	5	2		2	3	3	1	2		3	2	2		2	1	1	3	50
50			6		6	9		9	2		1	4			4		8			2		1	3		1	41
0 to 49			16		16	6		6	4	1	4	3	4	4	4	2	8	2	5	2	2	3	3	4	9	86
Total:			57	44	101	49		49	14	5	6	14	14	10	13	13	21	7	11	10	3	12	10	7	17	337
Median Score:			67.	100	86.6	72.		72.	62.	70.	37.5	60.	70.	63.3	67.5	77.5	53.7	66.6	65.	65.	50.	70.	56.6	50.	50.	68.4

TABLE 13 — GRADE 3

No. of examples attempted	SPEED										SUBTRACTION													
	A	B	C	D	5	E	F	6	14	25	26	27	28	29	30	36	37	38	39	40	41	42	43	44	45	Total
0						1	0	1			0		0				1									2
1		4			4		0				0	1	0	1	1											7
2	3	2			5	6	0	6			0		0	1	5	1	2	3		4	4	1	1			33
3	2	1	3		6	6	0	6	1	1	0	4	0	1	1	2	1	1	1		2		1		1	29
4	1	2	2		5	4	0	4	3	3	0	3	0	2	1	2	5	3	2	4		2		2		41
5	1		4		5	3	0	3	4		0	3	0		1	2	3	1		5	1	3	1	1	5	38
6			3		3		0		1	4	0	1	0			1	1	1	3	1	1	2		1	4	24
7		1			1		0		2	1	0		0				1	2		1				1		9
8							0				0	1	0				1			1			1			4
9			1		1		0				0		0								1	1		2		5
10							0				0		0							2				2		4
11							0				0		0												1	1
12							0				0		0													
13							0				0		0													
14							0				0		0													
15							0				0		0													
16							0				0		0													
17							0				0		0													
18							0				0		0													
19							0				0		0													
20							0				0		0													
21							0				0		0													
22							0				0		0													
23							0				0		0													
24							0				0		0													
Total Att:	7	10	13	0	30	20	0	20	11	9	0	13	0	5	9	8	15	11	6	18	9	9	4	9	11	197
Median Score:	3	2.5	5.5	0	4.	3.5	0	3.5	5.5	5.2	0	4.6	0	4.	3.	4.5	4.8	4.6	5.	5.2	3.5	4.6	4.	6.	6.	4.6

TABLE 14 — GRADE 4

No. of examples attempted	SPEED										SUBTRACTION													
	A	B	C	D	5	E	F	6	14	25	26	27	28	29	30	36	37	38	39	40	41	42	43	44	45	Total
0	0																	1								1
1	0		1		1		1	1																		2
2	0	1	4		5	3	4	7			1				1	1	1									16
3	0		8	1	9	4	7	11				1	1		2	1	5	1	2		1	1	1	2	1	39
4	0	1	10	4	15	10	7	17				1		1	2	3	3	2	3	3	1	1	2	1		55
5	0	4	6	3	13	7	9	16	1	1	2	1		1	4	1				1	1				1	43
6	0	4	6	1	11	9	10	19	1	2		2	2	1	2	4	1	4		1	1	2	3	1		57
7	0	2	2	1	5	7	5	12	1	1	1	3	1	3	2	1	2	2	2	1	3		1	2	3	46
8	0			1	1	2	1	3	2	1				2	1			2		2		3				17
9	0	2	2		4				1	1					1		1	1		1	3	2				15
10	0						1	1	1						1		1	1	1	2					1	9
11	0								2								1				1					4
12	0								2											1					1	4
13	0																									
14	0																									
15	0																								1	1
16	0																									
17	0																									
18	0																									
19	0																									
20	0																									
21	0																									
22	0																								1	1
23	0																									
24	0																									
Total Att:	0	14	39	11	64	42	45	87	11	6	4	8	4	8	16	11	15	14	8	12	11	9	7	6	9	310
Median Score:	0	6.2	4.7	5.3	5.1	5.5	5.4	5.5	9.	7.	5.5	6.5	6.5	7.3	5.7	6.	4.6	6.7	4.6	7.	7.6	7.3	6.3	6.	8.	5.9

SPEED **TABLE 15** **SUBTRACTION** **GRADE 5**

No. of examples attempted	A	B	C	D	5	E	F	6	14	25	26	27	28	29	30	36	37	38	39	40	41	42	43	44	45	Total
0																										
1																										
2	1		1		2		1	1						1												4
3	5		4		9	1	3	4				1					1			1	1					17
4	4	2	2	1	9	2	5	7						1			1	3	1		1		3			26
5	6	3	8	3	20	2	4	6				1	1	2	2		1	2			1		3	1		40
6	5	3	12	2	22	10	8	18	6	2		2		2	2		8		3	3		2	2		2	74
7	2	2	12	3	19	6	5	11	1	3	1	2	1	1	4	1	2	2	1	3	1	5	2	3	2	66
8	3	1	6	3	13		4	4	2	2	3	2		1	2	1	1		2	1	2	3	3		2	44
9	1		3	2	6	1	5	6	4				1				3		1	1	1				1	24
10			3	8	11	1	2	3	1		2		1	1	3					1	1				3	27
11			3	1	4				2	1	1			1		2	1	1		2					4	19
12				2	2	1	1	2	3				3			1	1									12
13			2	1	3				1				1								1					6
14			2		2											1										3
15				1	1																					1
16													1													1
17																										
18																										
19																										
20																										
21																										
22																										
23																										
24																										
Total Att.:	27	11	58	27	123	24	38	62	20	8	7	8	9	10	13	6	19	8	8	12	9	10	13	4	14	363
Median Score:	5.6	6.3	7.1	10.	7.	6.7	6.7	6.7	9.2	7.6	9.	7.	12.3	6.5	8.	11.5	6.8	5.5	6.	6.6	7.5	7.6	6.5	7.3	10.	7.4

SPEED **TABLE 16** **SUBTRACTION** **GRADE 6**

No. of examples attempted	A	B	C	D	5	E	F	6	14	25	26	27	28	29	30	36	37	38	39	40	41	42	43	44	45	Total
0																										
1																										
2																										
3																				2			1			3
4	2		1		3	2	4	6			0	1	1								1	1		1		14
5	5	1	7	2	15	1	3	4			0	1					1					2	1	1		25
6	3	3	5	2	13	4	3	7			0		1				1	4	1			1		1	1	30
7	2	5	5	2	14	6	9	15	2	1	0	1	2	1	5	1	2	3		2	1	1	1	1	2	55
8	4	1	5	3	13	6	7	13	4		0	1			1	1	3	4	1	3	1	3		1	2	51
9	3		3	4	10	4	1	5	2	1	0					1			6	4		3	2		4	38
10	4		3	3	10	6	2	8	1		9	1	1	2		1		1		5	2			1	3	36
11	1				1	3	1	4	2		0			1		3	2		1	2		1	1	2	4	24
12	1		1	2	4	1	1	2	1	1	0				1			3		1	1			4	1	19
13	1				1	2		2		2	0														1	6
14	1				1	1		1	1		0							1						1		5
15							1	1	1	1	0	0									1				1	5
16	1				1																					1
17																										
18	1				1																					1
19																										
20																										
21																										
22																										
23																1										1
24																										
Total Att.:	29	10	30	18	87	36	32	68	14	6		5	5	4	7	8	9	16	9	19	7	12	6	13	19	314
Median Score:	8.7	7.2	7.4	9.1	7.9	8.8	7.6	8.1	10.5	13.		8.	7.5	10.5	7.8	11.	8.3	8.2	9.5	9.7	10.5	8.3	8.	11.5	10.3	8.6

SPEED — TABLE 17 — SUBTRACTION — GRADE 7

No. of examples attempted	A	B	C	D	5	E	F	6	14	25	26	27	28	29	30	36	37	38	39	40	41	42	43	44	45	Total
0	0	0					0																			
1	0	0					0																			
2	0	0					0																			
3	0	0				2	0	2					1													3
4	0	0				4	0	4				1							1							6
5	0	0	1	1	2	4	0	4					1	1				1			1					10
6	0	0	6		6	20	0	20	1			3	1				1				1		1			34
7	0	0	10	2	12	16	0	16	3		1	2	4	2	1	2	1	3	1	1	1		2			52
8	0	0	15	6	21	17	0	17	1		1		2	1	2	2	1	2	1	2	2		2	2	1	60
9	0	0	5	2	7	9	0	9	2				2		1			3	1	2	1	1	1			30
10	0	0	5	9	14	7	0	7	4	1	1	1	2		3		3	5	1	3		1	1			47
11	0	0	3	3	6	6	0	6	2	2		1	1		3			1		1	1	2		1	1	28
12	0	0		6	6	4	0	4	2			2			3		2	2	1	2	2	3			3	32
13	0	0	3	3	6		0		3				1			1				2			1		2	16
14	0	0	1	3	4	1	0	1		1								1		1					3	11
15	0	0		2	2		0			1		1												1	3	8
16	0	0		1	1		0		1		1										1				2	6
17	0	0		3	3		0		1															1		5
18	0	0					0													1						1
19	0	0					0																			
20	0	0		1	1		0																		1	2
21	0	0					0																		1	1
22	0	0					0																			
23	0	0					0																			
24	0	0					0																			
Total Att.:	0	0	49	42	91	90	0	90	20	5	4	11	15	4	13	5	8	18	6	15	10	7	8	5	17	352
Median Score:	0	0	8.5	11.3	9.7	7.9	0	7.9	10.7	12.	9.	8.	8.5	7.5	11.	8.5	10.3	10.	9.	11.	8.	11.	9.5	12.	13.6	9.4

SPEED — TABLE 18 — SUBTRACTION — GRADE 8

No. of examples attempted	A	B	C	D	5	E	F	6	14	25	26	27	28	29	30	36	37	38	39	40	41	42	43	44	45	Total
0																										
1		0					0																			
2		0	1		1		0																1			2
3		0					0																			
4		0					0																			
5		0	1		1	1	0	1																		2
6		0	2	2	4	6	0	6	6				1			1					1	1		2		22
7		0	7	3	10	10	0	10	4			2	2	2	3		3						2		1	39
8		0	12	5	17	4	0	4	2			2	2	3	2			1		2		2				37
9		0	11	4	15	5	0	5	1			5	2	1	1	3	2		1		1		1			38
10		0	6	6	12	9	0	9	1			1	4	3	1	1	4		2	1	1	3	2	1	1	47
11		0	6	6	12	2	0	2			1	1			1	2	2	1	4			1	2	2	3	34
12		0	7	5	12	8	0	8			1		2	1	2	3	3	2	1	2		2	1	2	2	44
13		0	1	2	3	1	0	1			1	3			3		3	1		1		1			3	20
14		0		3	3	2	0	2			1						1		2	1		1			3	14
15		0	1	4	5		0			2	1					1		1				1	1		2	14
16		0	1	1	2		0			1	1		1			2	2									9
17		0	1		1		0													1						2
18				1	1	1	0	1		2								1	1	1					1	8
19				1	1		0										1									2
20				1	1		0													1					1	3
21						1	0	1																		1
22							0																			
23							0																			
24							0																			
Total Att.:			57	44	101	50	0	50	14	5	6	14	14	10	13	13	21	7	11	10	3	12	10	7	17	338
Median Score:			9.5	11.3	10.2	9.8	0	9.8	7.2	17.	14.	9.6	10.	9.	11.	12.	12.	13.	11.7	13.	11.	11.	10.5	11.5	13.6	10.8

ACCURACY TABLE 19 SUBTRACTION GRADE 3

Score in per cent.	A	B	C	D	5	E	F	6	14	25	26	27	28	29	30	36	37	38	39	40	41	42	43	44	45	Total
100	1	0	1	1	3	1	0	1	4				0		2											10
90		0					0						0												1	1
80		0		3	3		0		1	1	0		0					3		1	1	1		1	1	13
70		0				1	0	1					0	1							1			1		4
60		0		5	5		0		1		0	3	0			1	1			1				1	1	14
50	2	0	1	2	5	4	0	4	1	1	0		0	1	2			1		1				1	1	18
0 to 49	4	0	8	2	14	14	0	14	4	7	0	10	0	3	5	7	14	7	6	15	7	8	4	5	7	137
Total:	7	0	10	13	30	20	0	20	11	9	0	13	0	5	9	8	15	11	6	18	9	9	4	9	11	197
Median Score:	37.5	0	31.2	66.	52.	35.7	0	35.5	70.	35.7	9	35.	0	50.	50.	28.5	28.5	42.8	25.	30.	35.7	31.2	25.	50.	42.8	36.1

ACCURACY TABLE 20 SUBTRACTION GRADE 4

Score in per cent.	A	B	C	D	5	E	F	6	14	25	26	27	28	29	30	36	37	38	39	40	41	42	43	44	45	Total
100			5	3	8	8	7	15		1			2	3	1		1							1		32
90																									1	1
80		4	3		7	5	4	9	3			2	1	2	2			1		1	1	2		1	2	34
70		1	1	3	5	2	1	3		1					1		1			2					2	15
60		3	4	1	8	6	6	12	1	1					5	2		3	1	2	1	1	1	1		39
50			5	2	7	4	8	12	1						2	3		2	1			2	2		1	33
0 to 49		6	21	2	29	17	19	36	6	3	4	6	1	3	5	6	13	8	6	7	9	4	3	4	3	156
Total:		14	39	11	64	42	45	87	11	6	4	8	4	8	16	11	15	14	8	12	11	9	7	6	9	310
Median Score:		63.3	37.	73.3	54.2	60.	55.	56.6	50.	50.	25.	33.3	90.	85.	62.	50.	30.7	43.7	33.3	42.8	33.3	55.	55.	37.5	75.	49.6

ACCURACY TABLE 21 SUBTRACTION GRADE 5

Score in per cent.	A	B	C	D	5	E	F	6	14	25	26	27	28	29	30	36	37	38	39	40	41	42	43	44	45	Total
100	5		10	3	18	7	9	16							3		3						1		1	42
90			3	2	5	1	1	2					2			1										10
80	2	2	13	10	27	5	12	17	4	3		1		2	3		2	1		2	1	1		1	2	67
70	1	2	6	2	11	2	4	6	1	1	2	3	2	2		1		4		1		4				38
60	1	4	6	3	14	3	3	6	6		1	1	1	1	2	1	2	2	1	2	2		2		1	45
50	6		4	3	13	3	4	7	2	1				1	1	1	6		2	2	2	1	2		2	43
0 to 49	12	3	16	4	35	3	5	8	7	3	4	3	4	4	4	2	6	1	5	5	4	4	8	3	8	118
Total:	27	11	58	27	123	4	38	62	20	8	7	8	9	10	13	6	19	8	8	12	9	10	13	4	14	363
Median Score:	53.3	67.5	75.	82.5	70.	82.	82.5	82.3	61.6	60.	50.	70.	70.	60.	70.	60.	56.6	72.5	40.	55.	55.	60.	43.7	33.3	43.7	63.4

ACCURACY TABLE 22 SUBTRACTION GRADE 6

Score in per cent.	A	B	C	D	5	E	F	6	14	25	26	27	28	29	30	36	37	38	39	40	41	42	43	44	46	Total
100	3	1	6	1	11	5	3	8					1				1	1				1			1	24
90	1		1		2	3	1	4								1					1				1	9
80	3		4	3	10	7	9	16	5			2	2	2	4	2	1	1	2	4			1	2	3	67
70	2	2	1	1	6	7	6	13	1	1			1	2	1	4	1	1		4	1	2	2	4	3	47
60	5	2	6	4	17	5	4	9	2	1					1	1	2	5	1	2	1	1			2	45
50	5	2	3	3	13	7	3	10	2	1							1	2	1	4	1	4	1	3	5	48
0 to 49	10	3	9	6	28	2	6	8	4	3		3	1		1		3	6	5	5	3	4	2	4	4	84
Total:	29	10	30	18	87	36	32	68	14	6		5	5	4	7	8	9	16	9	19	7	12	6	13	19	314
Median Score:	60.	60.	65.	60.	61.7	75.5	75.	75.3	65.	50.		50.	85.	80.	82.5	79.5	65.	60.	50.	65.	60.	65.	60.	60.	65.	65.5

ACCURACY TABLE 23 SUBTRACTION GRADE 7

Score in per cent.	A	B	C	D	5	E	F	6	14	25	26	27	28	29	30	36	37	38	39	40	41	42	43	44	45	Total
100			11	35	46	22		22	2						5	1		3		1			1		81
90			3	3	6	3		3			1				1		2	2		3					4	22
80			13	3	16	22		22	6	2		2	2		2	3	2	5			3	1	2		2	70
70			11	1	12	16		16	2	1	1	2	2	1	2	1	1	2	1	4	3	1	1	1	1	55
60			2		2	10		10	2		1	3	1				1	3	2	2	1	2	1	1	4	35
50			5		5	8		8	4	1		3	1		1		2		2	4	1	2		1	2	37
0 to 49			4		4	9		9	4	1	1	2	9	3	2			3	1	1	2	1	3	2	4	62
Total:			49	42	91	90		90	20	5	4	11	15	4	13	5	8	18	6	16	10	7	8	5	17	352
Median Score:			82.3	100	100	80.9		89.	70.	80.	70.	65.	44.4	33.3	90.	86.6	80.	82.	60.	72.5	73.3	65.	70.	60.	67.5	79.4

ACCURACY TABLE 24 SUBTRACTION GRADE 8

Score in per cent.	A	B	C	D	5	E	F	6	14	25	26	27	28	29	30	36	37	38	39	40	41	42	43	44	45	Total
100			8	33	41	12		12				1		2	3	3						2				84
90			4	5	9	4		4	1	1			2		2	6	2		1	2		3		2	4	39
80			17	4	21	17		17	3	1		6	2	4	4	2	4	1	1	4	1	2	3		2	78
70			7	1	8	10		10	2	1	2	1	3		4	2	7	2	4	1		1			1	49
60			5	1	6	2		2	2	1	2	3	2	1			4	3		3	2	1	4		4	40
50			9		9	4		4	3				3	2			3	1					1	2	3	31
0 to 49			7		7	1		1	3	1	2	3	2	1			1		5			3	2	3	3	37
Total:			57	44	101	50		50	14	5	6	14	14	10	13	13	21	7	11	10	3	12	10	7	17	338
Median Score:			80.5	100	90.	84.7		84.7	65.	80.	65.	80.	70.	82.6	87.5	95.	74.2	70.	72.5	82.5	70.	85.	65.	55.	67.5	81.5

SPEED TABLE 25 MULTIPLICATION GRADE 4

No. of examples attempted	A	B	C	D	5	E	F	6	14	25	26	27	28	29	30	36	37	38	39	40	41	42	43	44	45	Total
0	0																			1						1
1	0	1	5		6		4	4							1		2				1		1			15
2	0		4		4	2	6	8								1			1	1		3	1			19
3	0	2	14	3	19	3	6	9		1		1	1	1	4	2	2	1	1	2	2		2	1	1	50
4	0	3	11	2	16	9	7	16	1	2	2		1	1	3	2	2	2	1	1	1	1	1	2	1	56
5	0	5	2	2	9	10	6	16	3		2	5		2	4	1	1	1	4	2		2		3		55
6	0	2	2	4	8	14	12	26	2			1	1	2	1	4	2	3		1	2	1	2		2	58
7	0	1	1		2	2	2	4	3	3		1	1	2	1	1	3	1	1	4	4	2			1	34
8	0					1	1	2	2						2		1	4			1					12
9	0					1		1	1								1	2							2	7
10	0						1	1	1								1								1	4
11	0																									
12	0																									
13	0																								1	1
14	0																									
15	0																									
16	0																									
17	0																									
18	0																									
19	0																									
20	0																									
21	0																									
22	0																									
23	0																									
24	0																									
Total Att.:	0	14	39	11	64	42	45	87	13	6	4	8	4	8	16	11	15	14	8	12	11	9	7	6	9	312
Median Score:	0		5.2	3.7	5.5	4.1	5.7	5.	6.4	7.3	5.	5.	5.6	5.	6.	5.	6	6.5	7.	5.2	5.5	7.	5.5	4.	5.	8.	6.3

SPEED TABLE 26 MULTIPLICATION GRADE 5

No. of examples attempted	A	B	C	D	5	E	F	6	14	25	26	27	28	29	30	36	37	38	39	40	41	42	43	44	45	Total
0																										
1			2		2																					2
2	2	1	3	1	7	1	1	2	1				1				2		2	2	1					18
3	3	2	8	1	14	1	1	2	1			1	1	2	1				1	1	2	1	2		1	30
4	3	2	7	4	16	4	3	7	3	1		1		1	1		1		1		1	1	1	1		36
5	3	4	11	2	20	5	7	12	4	1		4	1	4	2		5	3	2	4	1	4	1	1	1	70
6	2	1	14	4	21	5	12	17	2	2	1	2	2	1	5		1	1		1		1	7	1	2	67
7	7	1	1	6	15	5	7	12	3	3	4		3	1	4		4	1	2	2	1	1	2	1	3	62
8	2		6	4	12	2	3	5	3	1	2					1	2	3			2	2			3	36
9	3		1	1	5		2	2	3							2	1			2					1	16
10	1		3	2	6		1	1					1	1		1									2	12
11	1		1		2		1	1									1				1					5
12			1	1	2												2								1	5
13				1	1	1		1								1										4
14																1										1
15																										
16																										
17																										
18																										
19																										
20																										
21																										
22																										
23																										
24																										
Total Att.:	27	11	58	27	123	24	38	62	20	8	7	8	9	10	13	6	19	8	8	12	9	10	13	4	14	363
Median Score:	7.1	5.2	5.8	7.3	6.1	6.2	6.5	6.4	6.5	7.	7.7	5.5	7.	5.5	6.6	10.	7.	7.	5.	5.7	6.	5.7	6.4	6.	8.	6.4

SPEED TABLE 27 MULTIPLICATION GRADE 6

No. of examples attempted	A	B	C	D	5	E	F	6	14	25	26	27	28	29	30	36	37	38	39	40	41	42	43	44	45	Total
0												0														
1				1		1						0														1
2	2				2						0		1							2				1		6
3	6	1	3		9		2	2			0													1	1	13
4	3		4	2	9	4	1	5			0				1		1				1	1	1			4	23
5	1	3	2	3	9	3	5	8			0	2	1					4		2	1	3	1	1	3	36
6	7	2	10	4	23	4	12	16		1	0		2	2			2	1		2		2		2	4	57
7	4	2	6	4	16	7	4	11	2	1	0	3		1		2	1	4	3	2	1	2		2	2	63
8	2	2	2	4	10	8	4	12	3	2	0				3		2		1	3	2	2	3	3	4	60
9	3		2	1	6	3	1	4	3	2	0				1		2	2	2	4	1		1	2		30
10	2				2	3	1	4	1		0		1	1		1		1	2	2						15
11						1	1	2	2		0					1	1	1	1	2		1		1		12
12						2		2	2		0					2						1			1	8
13						1		1			0				1	1		1								4
14																										
15							1	1													1					2
16									1						1			1								3
17																1		1								2
18																										
19																										
20																										
21																										
22																										
23																										
24																										
Total Att.:	29	10	30	18	87	36	32	68	14	6	0	5	5	4	7	8	9	16	9	19	7	12	6	13	19	314
Median Score:	6.5	6.5	6.4	7.	6.6	8.	6.6	7.1	9.6	8.6	0	6.3	6.5	7.	9.	12.	7.5	7.7	9.5	8.6	7.5	7.	7.3	8.	7.5	7.4

SPEED TABLE 28 MULTIPLICATION GRADE 7

No. of examples attempted	A	B	C	D	5	E	F	6	14	25	26	27	28	29	30	36	37	38	39	40	41	42	43	44	45	Total
0	0	0																								
1	0	0																								
2	0	0				2		2																		2
3	0	0	2		2	2		2																		4
4	0	0	4		4	12		12				1					1	1			2		1			22
5	0	0	4	3	7	8		8				1	4	3					1		2		1			27
6	0	0	8	6	14	18		18	1	1	1	2	2	1			1	1	1	3	1			2		49
7	0	0	6	8	14	16		16	1		2	1	5		1	1	1	1	1	3	3	2	1	2	1	56
8	0	0	11	6	17	10		10	2	1		1	1			1	2	9	1	1		1	3		4	54
9	0	0	7	4	11	12		12	3			2	2		2	2		2	1	2	1	1			3	44
10	0	0	3	3	6	8		8	6				1			1	2	1	1	1		2	1		8	38
11	0	0	1	4	5	1		1	2						1		1	1		1		1			1	14
12	0	0	1	3	4	1		1	2			1			2			1		2	1					14
13	0	0	1	2	3				1						1											5
14	0	0	1	1	2					2	1	1			3			1					1			11
15	0	0		1	1				2						2					1						6
16	0	0		1	1					1		1														3
17	0	0													1					1						2
18	0	0																						1		1
19	0	0																								
20	0	0																								
21	0	0																								
22	0	0																								
23	0	0																								
24	0	0																								
Total Att.:	0	0	49	42	91	90		90	20	5	4	11	15	4	13	5	8	18	6	15	10	7	8	5	17	362
Median Score:	0	0	8.9	8.6	8.2	7.1		7.1	10.5	14.5	7.5	9.	7.4	6.6	14.	9.5	8.5	8.6	8.	9.5	7.	9.	8.3	7.6	10.1	8.3

SPEED TABLE 29 MULTIPLICATION GRADE 8

No. of examples attempted	A	B	C	D	5	E	F	6	14	25	26	27	28	29	30	36	37	38	39	40	41	42	43	44	45	Total
0	0	0					0							0												
1	0	0	1		1		0							0												1
2	0	0					0							0												
3	0	0	4	1	5	1	0	1						0												6
4	0	0	2	1	3	5	0	5					1	0									1	1		11
5	0	0	5	4	9	4	0	4				1		0	1	1						1		1		18
6	0	0	4	2	6	10	0	10	3			1		0		2	2				1	1	1			27
7	0	0	9	7	16		0					1	3	0	1	1	1			1	1		1	1	1	28
8	0	0	16	7	23	8	0	8	3			3	1	0	2		2	1		1		3	2		4	53
9	0	0	4	5	9	9	0	9	3		4	5	2	0		1	3		2	1		1	1	2	3	46
10	0	0	4	9	13	4	0	4	1			2	3	0	2	1	2	1	2	1	1	2	3	1	8	47
11	0	0	1	1	2	2	0	2	2	1			1	0	1	1	4	1	3	1				1	1	21
12	0	0	7	3	10	3	0	3	1	1	1		1	0	2	1	3	1	1	3		3				31
13	0	0		1	1	1	0	1			1			0	3	2										8
14	0	0		3	3	1	0	1		1			1	0	1	1	1		1	1			1			12
15	0	0				1	0	1		2		1	1	0		1	1	1	2			1				11
16	0	0					0		1							1		1								3
17	0	0					0										1			1						2
18	0	0					0																			
19	0	0				1	0	1																		1
20	0	0																1								1
21	0	0																								
22	0	0																								
23	0	0																								
24	0	0																								
Total Att.:	0	0	57	44	101	50	0	50	14	5	6	14	14	0	13	13	20	7	11	10	3	12	10	7	17	327
Median Score:	0	0	8.2	9.8	8.4	8.	0	8.	9.3	15.	9.7	9.2	10.	0	13.	12.	11.	13.	11.6	12.	8.	10.	9.	9.5	10.1	9.5

ACCURACY TABLE 30 MULTIPLICATION GRADE 4

Score in per cent.	A	B	C	D	5	A	B	6	14	25	26	27	28	29	30	36	37	38	39	40	41	42	43	44	45	Total
100			8		8	9	6	15	1	1			1	2			1					1				30
90																	2									2
80		1	1	1	3	8	4	12		1			1	1	1			1		2		1			1	24
70		1	4	2	7	2	3	5	2	1				1	1				1	1	1	2			1	23
60		4	3	4	11	7	3	10	1	1		3		1	2	1	1				2	2			1	26
50		2	2	1	5	7	7	14	3	1	1		2	2	1	3	3	4		3	4		1	1	2	50
0 to 49		6	21	3	30	9	22	31	6	1	3	5		1	11	7	8	9	7	6	4	3	6	5	4	157
Total:		14	39	11	64	42	45	87	13	6	4	8	4	8	16	11	15	14	8	12	11	9	7	6	9	312
Median Score:		55.	47.6	65.	54.	67.1	51.4	59.2	53.3	70.	33.3	40.	60.	70.	36.3	42.8	50.	38.8	28.5	50.	55.	70.	33.3	30.	55.	49.6

ACCURACY TABLE 31 MULTIPLICATION GRADE 5

Score in per cent.	A	B	C	D	5	E	F	6	14	25	26	27	28	29	30	36	37	38	39	40	41	42	43	44	45	Total
100	6	1	8	9	24	6	9	15	1						2											42
90	1		1		2		1	1																		3
80	1		10	6	17	5	8	13	1	2						1	3	1			1	2	1		2	44
70	2		6	2	10	6	5	11	4	1	2		1	3	3		3	3	1	1			2		2	47
60	3	1	5	1	10	3	5	8	2	2	1	2			2	3	2	1		2	2	3	2		4	46
50	4		13	4	21	1	8	9	6	2	1	1	3		1		3	1	1	1	3	1	2		3	59
0 to 49	10	9	15	5	39	3	2	5	6	1	3	5	5	7	5	2	8	2	6	8	3	4	6	4	3	122
Total:	27	11	58	27	123	24	38	62	20	8	7	8	9	10	13	6	19	8	8	12	9	10	13	4	14	363
Median Score:	60.	33.3	62.	83.3	62.	78.3	78.	78.1	56.6	65.	60.	40.	50.	35.5	65.	63.3	66.6	70.	33.3	37.5	56.6	60.	55.	25.	62.5	60.2

ACCURACY TABLE 32 MULTIPLICATION GRADE 6

Score in per cent.	A	B	C	D	5	E	F	6	14	25	26	27	28	29	30	36	37	38	39	40	41	42	43	44	45	Total
100	7		2	1	10	3	2	5					2			1					1				1	20
90						1		1	1							1		1								4
80	1	1	7	2	11	9	4	13							3	3	1	1	2	1	1	4	1	2	1	44
70	2	1	3	2	8	10	3	13	2			1			1		1	3	3	3	2		1		2	40
60	4	2	5	3	14	6	9	15	5	1			1	1	1	1	3	2		4	1	3	1	4	1	58
50	4		6	5	15	4	2	6	3	1				1	1	1	2	2	1	3		1	1	1	3	42
0 to 49	11	6	7	6	29	3	12	15	3	4		4	2	2	1	1	2	7	3	8	2	4	2	6	11	106
Total:	29	10	30	18	87	36	32	68	14	6		5	5	4	7	8	9	16	9	19	7	12	6	13	19	314
Median Score:	60.	41.6	64.	58.	60.	75.	62.2	68.6	62.	25.		37.5	70.	50.	80.	83.3	63.3	55.	73.3	56.6	75.	63.3	60.	60.	45.4	61.6

ACCURACY TABLE 33 MULTIPLICATION GRADE 7

Score in per cent.	A	B	C	D	5	E	F	6	14	25	26	27	28	29	30	36	37	38	39	40	41	42	43	44	45	Total
100			10	29	39	16		16			1			1	1	1	1	1					1			62
90			2	3	5	1		1	1											1					1	9
80			8	8	16	17		17	5	2	1	3		1	3	2		2		4	2	1	1	1	3	64
70			9		9	16		16	2		1		1		2	2	2	5	1	3		4	1		2	51
60			5		5	11		11	3	1		3	3	1	3			3	1	2			2		5	43
50			8	1	9	15		15	6	1		3	4		3		3	5	2	3	6	1	1	1	2	65
0 to 49			7	1	8	14		14	3	1	1	2	7	1	1		2	2	2	2	2	1	2	3	4	58
Total:			49	42	91	90		90	20	5	4	11	15	4	13	5	8	18	6	15	10	7	8	5	17	352
Median Score:			75.	100.	89.3	73.1		75.6	63.3	70.	80.	63.3	62.5	70.	70.	85.	66.6	66.6	55.	73.3	55.	75.	65.	50.	66.	52.8

ACCURACY TABLE 34 MULTIPLICATION GRADE 8

Score in per cent.	A	B	C	D	5	E	F	6	14	25	26	27	28	29	30	36	37	38	39	40	41	42	43	44	45	Total
100			17	25	42	11		11								3	1			1						58
90			6	8	13	3		3	1			1	1		2	2	1		2	1					1	28
80			15	11	26	13		13	2	1		1	2		2	6	5		1	1		2	1	2	3	67
70			8		8	7		7	1		1	1	3		4	3	1	2	2	1		1	2		2	39
60			2		2	6		6		2	1	2	3		4		4	3		3	1	3	1	2	5	42
50			1		1	4		4	2	1	2	2	2		1		3	1	2	1	1	2	1	1	2	29
0 to 49			9		9	6		6	8	1	2	7	3				5	1	4	2	1	4	5	2	4	64
Total:			57	44	101	50		50	14	5	6	14	14		13	13	20	7	11	10	3	12	10	7	17	327
Median Score:			86.	100.	93.	81.5		81.5	44.7	65.	55.	50.	66.		75.	88.	65.	66.6	60.	66.6	60.	60.	50.	65.	66.	87.4

SPEED — **TABLE 35** — **DIVISION** — **GRADE 4**

No. of examples attempted	A	B	C	D	5	E	F	6	14	25	26	27	28	29	30	36	37	38	39	40	41	42	43	44	45	Total
0	0		19	0	19		3	3								3	4	1		2		2	1			35
1	0	1	4	0	6	6	8	14			1	1		1	1	3	3	2	2				1	2	2	38
2	0	6	6	0	12	8	7	15	1		2	5		2	3	3	1	1	1	1	2	1			1	51
3	0	3	5	0	8	8	10	18	6	2		1	1		4	2		2	4	4	1	2	3	4		62
4	0	3	4	0	7	10	6	16	2	2					2		4	3		2	2	1	2		1	44
5	0		1	0	1	1	5	6	2	2		1	3	4	3		1			2	2	3			1	31
6	0	1		0	1	1	5	6							1			3			2				1	14
7	0			0			1	1			1				1		1	1								5
8	0			0										1	1			1			1					4
9	0			0																						
10	0			0																1					1	2
11	0			0													1									1
12	0			0		1		1																	1	2
13	0			0															1							1
14	0			0																						
15	0			0																					1	1
16	0			0		1		1																		1
17	0			0																						
18	0			0																						
19	0			0																						
20	0			0																						
21	0			0																						
22	0			0																						
23	0			0																						
24	0			0																						
Total Att.:	0	14	39	0	53	36	45	81	11	6	4	8	4	8	16	11	15	14	8	12	10	9	7	6	9	292
Median Score:	0	3.	1.2	0	2.2	3.5	3.5	3.5	4.8	3.5	3.	2.4	5.3	6.2	4.	3.	3.	4.3	8.	3.7	5.	4.	3.6	3.2	6.	3.4

SPEED — **TABLE 36** — **DIVISION** — **GRADE 5**

No. of examples attempted	A	B	C	D	5	E	F	6	14	25	26	27	28	29	30	36	37	38	39	40	41	42	43	44	45	Total
0			1		1	1		1									1			1						4
1	3		5		8				1								4	1	1	1	1					16
2	3	5	6	2	16	1	3	4	8			2					3	1	2	3	2	2	5	1		49
3	7	3	14	4	28	6	3	9	6		2	2	3		2		2	1	2	1	2		3	2	3	68
4	8	1	11	9	29	2	10	12	1	1		1	2	4	1	3	2	2	2	2	1	4	1		4	72
5	2		10	3	15	6	11	17	3	3	4	2	3		4		3		1	1		2	2	1		61
6	3	2	8	4	17	2	1	3	1	3			1	2	1			2		3	1	1	1		4	40
7	1		2	2	5	1	4	5	1		1			3	3		2					1				21
8				1	1	1	2	3		1				1	1	1	1	1			1		1		2	14
9						1	1	3													1					4
10			1	1	2			1	1																	3
11				1	1	1	1	2							1											4
12						1	1	2								1	1									4
13																1									1	2
14																										
15																										
16																										
17																										
18																										
19																										
20																										
21																										
22																										
23																										
24																										
Total Att.:	27	11	68	27	123	24	38	62	20	8	7	8	9	10	13	6	19	8	8	12	9	10	13	4	14	363
Median Score:	4.1	3.3	4.2	4.9	4.3	5.3	5.2	5.7	3.2	6.	5.3	3.6	5.	4.5	5.6	5.	4.	4.6	3.5	4.	4.	4.7	3.6	3.5	5.	4.6

TABLE 37 — **SPEED** — **DIVISION** — **GRADE 6**

No. of examples attempted	A	B	C	D	5	E	F	6	14	25	26	27	28	29	30	36	37	38	39	40	41	42	43	44	45	Total
0																										
1	1	1			2						0	1									1					4
2	2	3	2		7	1	1	2			0		1								1				1	12
3	3	3	5		11	3	6	9		1	0		3				1	2	2	1		2	1	1		24
4	9		3	1	13	1	6	7		2	0	2	1		2		5	4		1		3	2	3	2	47
5	6		10	2	18	2	6	8		1	0				1	1	2	2	1	4		3	1	1	6	49
6	5	3	4	4	16	4	4	8	6		0	1		2	1			3	3	2	2	1	1	2	2	50
7	1		3	4	8	8	2	10	3	1	0				1		1	1	1	4	3	1			2	36
8	1		3	2	6	6	2	8	2		0	1		2	1	1		1	2	3		2	1	2	2	34
9				3	3	4	2	6	1		0									2				1	3	16
10				1	1	2	1	3	1		0				1	1				1						8
11	1				1	3		3		1	0					2		1		1				1	1	11
12				1	1	1	2	3			0					1		1								6
13											0													2		2
14											0					1										1
15						1		1	1		0					1										3
16																		1								1
17																										
18																										
19																										
20																										
21																										
22																										
23																										
24																										
Total Att.:	29	10	30	18	87	36	32	68	14	6	0	5	5	4	7	8	9	16	9	19	7	12	6	13	19	314
Median Score:	4.	3.3	4.5	7.5	5.6	7.8	5.5	7.	7.3	5.	0	5.	3.6	7.	7.	10.5	4.8	6.	6.6	7.5	7.	5.3	5.	6.	6.5	6.4

TABLE 38 — **SPEED** — **DIVISION** — **GRADE 7**

No. of examples attempted	A	B	C	D	5	E	F	6	14	25	26	27	28	29	30	36	37	38	39	40	41	42	43	44	45	Total
0	0	0					0																			
1	0	0	1		1		0												1							2
2	0	0	1	1	2	1	0	1				1							1							5
3	0	0	3	1	4	11	0	11					1				1	1		1	1	1			1	22
4	0	0	8	8	16	12	0	12	3		2	2	4	2				2	1		3		3	1		51
5	0	0	6	4	10	11	0	11	1			3	4			1	1	1	1					1	1	35
6	0	0	10	3	13	15	0	15	1	1		1	2	2	3		1	3		2	1		2	1		48
7	0	0	6	8	14	12	0	12	1			1	2		1	1		2		1		1	2	2		40
8	0	0	8	5	13	11	0	11	4	1	1				1	3	3	2	1	4	2	1				47
9	0	0	2	3	5	4	0	4	2	1			1		1		2	1	1	2	1	2			5	28
10	0	0	2	4	6	8	0	8	6			1	1		2			3		1					3	31
11	0	0	1		1	3	0	3	1			1			2			1				1			2	12
12	0	0		2	2	2	0	2							1			1		2	1	1	1		3	14
13	0	0	1	2	3		0				1				1										1	6
14	0	0					0			1		1									1				1	4
15	0	0		1	1		0		1	1																3
16	0	0					0								1			1		1						3
17	0	0					0																			
18	0	0					0													1						1
19	0	0					0																			
20	0	0					0																			
21	0	0					0																			
22	0	0					0																			
23	0	0					0																			
24	0	0					0																			
Total Att.:			49	42	90	90		90	20	5	4	11	15	4	13	6	8	18	6	15	10	7	8	5	17	352
Median Score:			6.5	7.5	6.2	6.6		6.6	9.	10.	5.	6.	5.7	5.	10.5	8.3	8.3	8.	5.	9.	7.	9.5	6.5	7.	10.6	7.4

SPEED TABLE 39 DIVISION GRADE 8

No. of examples attempted	A	B	C	D	5	E	F	6	14	25	26	27	28	29	30	36	37	38	39	40	41	42	43	44	46	Total
0	0	0																								
1	0	0	1		1																					1
2	0	0				2		2														1	1	1		5
3	0	0	4		4	2		2															1		1	8
4	0	0	2	2	4	7		7				3							1		1	1		1		18
5	0	0	6		6	5		5				1			3	1	2	1	1				2	1	1	23
6	0	0	4	6	10	2		2				1	2		3	1	2			1			2			24
7	0	0	9	3	12	7		7		1		1					2		1	1	1	2		1		29
8	0	0	16	8	24	6		6	2	2		4	5		2	1	2	1	2	2		4		1		58
9	0	0	4	8	12	5		5	3		2	2				3	2			1			2	2	5	39
10	0	0	4	1	5	6		6	3		1	1	2		4				2	1	1	1			3	30
11	0	0	1		1	2		2	2		1	1			1	2	3	2		1			1		2	19
12	0	0	7	4	11	3		3	2	1									2	1					3	24
13	0	0		4	4	1		1	1		1		2			2	3		1			3			1	19
14				3	3								1			2	5	1	1				1		1	15
15				2	2	1		1					1			1										5
16				1	1	1		1	1		1		1					2								7
17				1	1															1						2
18										1										1						2
19																										
20				1	1																					1
21																										
22																										
23																										
24																										
Total Att.:			57	44	101	60		60	14	5	6	14	14		13	13	21	7	11	10	3	12	10	7	17	328
Median Score:			8.2	9.3	8.4	9.		9.	10.6	9.	11.	8.2	9.		8.5	10.5	10.3	12.	10.5	10.	8.	8.5	6.6	7.5	10.6	8.7

ACCURACY TABLE 40 DIVISION GRADE 4

Score in per cent.	A	B	C	D	5	E	F	6	14	25	26	27	28	29	30	36	37	38	39	40	41	42	43	44	45	Total
100		2	2		4	3	6	9	1	2	1			1	3					1	1	2	1		1	27
90						0		0																		
80						0	3	3					3	2	1			1			2	1			1	14
70		1			1	5	4	5	3							1	1	1		1						13
60		1			1	3	4	7	1						2		1	1		3	3				3	22
50		3	1		4	6	5	11	2	2		3		2	2	2	3	1		1	1				1	35
0 to 49		7	36		43	19	27	46	4	2	3	6	1	3	8	8	10	10	8	6	3	6	6	6	3	181
Total:		14	39		63	36	45	81	11	6	4	8	4	8	16	11	16	14	8	12	10	9	7	6	9	292
Median Score:		50.	27.7	0	31.3	47.3	42.6	42.6	60.	55.	33.3	40.	86.6	55.	50.	37.6	40.	35.	25.	50.	63.3	41.6	33.3	25.	63.3	40.3

ACCURACY TABLE 41 DIVISION GRADE 5

Score in per cent.	A	B	C	D	5	E	F	6	14	25	26	27	28	29	30	36	37	38	39	40	41	42	43	44	45	Total
100	8	1	16	6	31	5	7	12	3	3		1	2		3	1	3	2			1				1	63
90				1	1		1	1							1											3
80		1	6	4	11	3	10	13		2	1				2			1		1		2	1		2	36
70	3		4	5	12	3	6	9	1						1		4			1		1				29
60	2	1	4	4	11	6	2	8	2	1	1	1	1	1	4	2	4	2		2	1	1	2		1	45
50	1	4	4	2	11	1	6	7	3					3	1			1	1	2	2	1	2		2	36
0 to 49	13	4	24	5	46	6	6	12	11	2	6	6	6	6	1	3	8	2	7	6	5	6	8	4	8	161
Total:	27	11	58	27	123	24	38	62	20	8	7	8	9	10	13	6	19	8	8	12	9	10	13	4	14	363
Median Score:	60.	65.	62.5	76.	64.5	68.3	78.3	62.6	45.4	85.	40.	33.3	41.6	41.6	80.	50.	65.	65.	28.5	60.	50.	50.	43.7	25	43.7	58.6

ACCURACY TABYE 42 DIVISION GRADE 6

Score in per cent.	A	B	C	D	5	E	F	6	14	25	26	27	28	29	30	36	37	38	39	40	41	42	43	44	46	Total
100	6	2	4	2	14	9	8	17					1	1		1		1		3		2	1	1	1	43
90						1		1	1						1									1		4
80	2	1	5	6	14	12	3	15	3			1		1	1	3		6	2	3	1	3	1		6	60
70	4		1	3	8	6	2	8	2	1					1	1	3	1		1	1		2	1	4	34
60	4	2	3	1	10	2	5	7	2	1		1	2	2	1	2	1	2	3	3	1	4	1	2	2	47
50	2	2	6	2	12	2	6	8	1	1			1		1	1	2	2		5		2		1	1	38
0 to 49	11	3	11	4	29	4	8	12	5	3		3	1		2		3	4	4	4	4	1	1	7	5	88
Total:	29	10	30	18	87	36	32	68	14	6		6	5	4	7	8	9	16	9	19	7	12	6	13	19	314
Median Score:	65.	60.	56.6	76.6	63.	83.3	64.	78.7	66.	50.		60.	65.	70.	70.	80.	60.	70.	63.3	63.3	50.	67.5	75.	50.	75.	66.6

ACCURACY TABLE 43 DIVISION GRADE 7

Score in per cent.	A	B	C	D	5	E	F	6	14	25	26	27	28	29	30	36	37	38	39	40	41	42	43	44	45	Total
100			14	34	48	37		37	5			2	2	1	2		1	2		1			1		1	103
90			3		3	3		3	6	1		1	1					2		2	1				3	22
80			8	4	12	20		20	4		1	2	1		2	3	1	4		6	2	2	2		4	66
70			6	3	9	8		8	2	3		1	2	2	2	2	1	2		2	2		2	1		41
60			8		8	10		10	1	1	1		3	1	3		3	1	1	1	3	1	1	1	5	45
50			5	1	6	4		4	2		1	2			1		1	3	1	1	1	1	2		1	27
0 to 49			5		5	8		8	1		1	3	6		3		1	4	4	2	1	3		3	3	48
Total:			49	42	91	90		90	20	5	4	11	15	4	13	5	8	18	6	15	10	7	8	6	17	352
Median Score:			85.5	100.	93.3	87.5		87.5	90.	76.6	60.	80.	66.6	75.	70.	83.3	66.6	75.	37.5	83.3	70.	60.	75.	50.	70.	822

ACCURACY TABLE 44 DIVISION GRADE 8

Score in per cent.	A	B	C	D	5	E	F	6	14	25	26	27	28	29	30	36	37	38	39	40	41	42	43	44	45	Total
100			17	39	56	29		29			1	1	2		6	7	2		1	2	1		1		1	110
90			5	3	8	3		3	1	1	1		5		2	2	4	1	3	2		1	1		3	38
80			15		15	9		9	2	1	1	1	2		2	1	3	2	2	1	1	6	2		4	55
70			8	2	10	5		5	1	1		4	1		1	2	3	1		2	1		1	2		35
60			2		2	2		2	2	1	2	1	2			1	2	1	2	2			2	1	5	28
50			1		1	2		2	4	1		2	2				3	1	1	1		2	1	1	2	24
0 to 49			9		9				4		1	6			2		4	1	2			3	2	3	2	38
Total:			57	44	101	50		50	14	5	6	14	14		13	13	21	7	11	10	3	12	10	7	17	328
Median Score:			86.	100.	100.	100.		100.	57.5	80.	70.	60.	90.		100.	100.	76.6	80.	85.	80.	90.	81.6	70.	60.	70.	87.

The median for the third grade in addition for Jackson county is 5.1 problems. The standard worked out by Professor Courtis is 4. This indicates that Jackson county is up to standard in speed as far as third grade addition is concerned.

The following are the standards in addition for the various grades and the Jackson county record:

Grade	Jackson County	Standard
3	5.1	4
4	5.9	6
5	6.9	8
6	7.9	10
7	8.6	11
8	8.9	12

This record indicates that considerable work needs to be done in the upper grades to develop greater speed. It is to be noted that the scores of the two-room schools (No. 45) as shown in the tables are consistently higher than the medians for the county.

TABLE 45

Jackson county median scores compared with Iowa state median scores. *

Addition	III	IV	V	VI	VII	VIII
Iowa						
Speed	...	6.2	7.4	8.5	9.1	10.0
Accuracy	~~32.8~~	~~42.5~~	~~51.9~~	~~53.7~~	~~60.7~~	~~68.4~~
Jackson Co.		51	62	67	68	72
Speed	5.1	5.9	6.9	7.9	8.6	68.4
Accuracy	32.8	42.5	51.9	53.7	60.7	68.4
Subtraction						
Iowa						
Speed	.....	6.8	8.2	9.7	10.7	12.
Accuracy	.....	74.	80.	83.	84.	86.
Jackson Co.						
Speed	4.6	5.9	7.4	8.6	9.4	10.8
Accuracy	36.1	49.6	63.4	65.5	79.4	81.5
Multiplication						
Iowa						
Speed	.....	5.8	7.0	8.6	9.9	11.5
Accuracy	.....	61,	70.	76.	78.	81.
Jackson Co.						
Speed	.....	5.3	6.4	7.4	8.3	9.5
Accuracy	.....	49.6	60.2	61.5	52.8	87.4
Division						
Iowa						
Speed	.....	4.2	5.5	7.0	8.5	10.8
Accuracy	.....	59.	74.	83.	88.	91.
Jackson Co.						
Speed	.....	3.4	4.6	6.4	7.4	8.7
Accuracy	.....	39.5	58.6	66.5	82.2	87.

* Iowa scores were taken from Bulletin No. 24, "The Arithmetic Skill of Iowa School Children." 1916.

Table No. 45 is read thus: In Iowa the median number of problems attempted by the fourth grade children in addition was 6.2 problems and the median accuracy in per cent is 56. In Jackson county the median was 42.5. The accuracy is exceptionally low in each case and much drill needs to be given this phase of school work.

In only one case does a Jackson county median exceed that of the state of Iowa, and that is in the eighth grade in accuracy in multiplication.

The tables are self explanatory and little comment needs to be made in reference to them.

STONE REASONING TEST

The Stone Reasoning Test in Arithmetic was given to grades 5 to 8 inclusive.

The following problems taken from the list indicate the nature of the work:

1. If you buy 2 tablets at 7 cents each and a book for 65 cents, how much change should you receive from a two-dollar bill?

5. The uniforms for a baseball nine cost $2.50 each. The shoes cost $2 a pair. What was the total cost for uniforms and shoes for the nine?

6. In a school of a certain city there are 2200 pupils; ½ are in the primary grades, ¼ in the grammar grades, ⅛ in the high school and the rest in the night school. How many pupils are there in the night school?

There were twelve problems in the list and the time was 15 minutes. The students were told to solve as many problems as they had time for and to work them in the order given.

Directions for scoring Stone Reasoning Tests: The following directions were sent out from the Bureau relative to scoring the papers:

In order to have the scores of a system, school, or pupil comparable with those in the scale as standardized, the papers should be marked and scored as were those in the original study. To this end it is essential that each of the following steps be taken according to directions:

(1) MARK THE SOLUTIONS ON THE BASIS OF RIGHT OR WRONG REASONING.

Example: In marking the solutions the following rulings should be observed:

1. Mistakes in copying are not counted against the child; e. g., Problem I.

$$2\times 7=14$$
$$14+65=89$$
$$100-89=11$$

The reasoning of the problem was correct, so the mistake in copying is not counted.

2. Errors in fundamentals do not count against the reasoning score: e. g., Problem 5.

\$2.50	\$5.50
\$2.00	9
\$5.50 cost of each.	\$50.50

The reasoning in this problem is correct, so the mistakes in fundamentals are not counted.

3. The child is given credit for the part of the problem that is reasoned correctly when part is wrong—the amount of credit depending upon the number of steps reasoned correctly; e. g., Problem 1.

7	65
2	—14
14	41.

Since one of the steps is correct, this was counted one-third correct.

4. If a problem is unfinished, credit is given for the steps taken if correct, or in so far as they are correct; e. g., (a) Problem 6. 2200 pupils. ½ of 2200 is 1100 pupils in primary grades.

This was counted 1-5 correct.

(b) Problem 5. \$2.50 cost of one uniform.
9
\$22.50 cost of nine uniforms.

\$ 2.00 cost of one pair shoes.
9
\$18.00 cost of nine pair shoes.

This was counted 2-3 correct.

(2) SCORE THE SOLUTIONS ACCORDING TO ASSIGNED WEIGHTING AND FIND SCORES FOR INDIVIDUAL PUPILS.

The weightings to be used in scoring the solutions are:

For first problem, 1	For seventh problem, 1.2
For second problem, 1	For eighth problem, 1.6
For third problem, 1	For ninth problem, 2
For fourth problem, 1	For tenth problem, 2
For fifth problem, 1	For elev'th problem, 2
For sixth problem, 1	For twelfth problem, 2

For example, any one of the first five problems solved correctly should score 1 for the pupil, school, and system; the sixth would count 1.4; the seventh, 1,2, etc. In the third illustration under Directions for First Step, the solution of the first problems as given would count 1-3 for the pupil, school, and system; and in the first illustration under the 4th ruling the partial solution of the sixth problem would count 1-5 of 1.4 or .28.

The score of each individual pupil is found by adding all the scores of all the solutions found on his paper.

(3) COMPUTE THE TOTAL OF THE INDIVIDUAL SCORES ON THE BASIS OF A HUNDRED PUPILS OR COMPUTE THE PER CENTS OF PUPILS MAKING SCORES 0, 1, 2, etc. Explanation:

Sort the papers, placing the smallest score on top, and graduate so that the largest is on the bottom.

To get a single measure of a class, school, or system, add scores of all pupils and compute on basis of a hundred pupils; e. g., Mr. Hebden found the score for 716 Baltimore city pupils to be 5749.48. Reduce to the basis of a hundred pupils this is 803.2 as the score for the Baltimore system. (This is the measure used in the Springfield, Illinois, Survey and by Superintendent Stark in the Hackensack Report.)

To get the most helpful measure for supervision, compute the per cents of pupils that made scores of 0, I, 1, 3, 4, etc., and construct a surface of distribution showing deviation from the standard. (This is the plan followed in the Butte, Montana, Survey and in handling the Iowa State Teachers College Training School scores.)

The most helpful measure for teaching is the score of each individual pupil.

(4) COMPUTE THE PER CENTS OF ACCURACY.

The per cent of accuracy is found by computing the per cent reasoned correctly. In going over the papers for the data for this figuring, the following rulings should be observed:

1. In determining the number of problems attempted, count number on which any work was done. This will be sufficiently exact for fifty to a hundred pupils. But for determining the number of problems attempted by individual pupils, if the last problem worked is incomplete, use fractions to represent the steps attempted.
2. In determining the number of problms correct for fifty to a hundred pupils, count the number that are worked entirely correct. But for computing the scores of individual pupils, use fractions to represent the steps correct.

Tentative Standards

The author of the tests makes the following statements relative to standard scores:*

"That 80 per cent or more of the fifth grade pupils reach or exceed a score of 5.5 with at least 75 per cent accuracy; that 80 per cent or more of the sixth grade pupils reach or exceed a score of 6.5 with at least 80 per cent accuracy; that

*Standardized reasoning tests in arithmetic and how to use them by Cliff W. Stone, published by Teachers College, Columbia University, 1916.

TABLE 46

No. of school	Grade	(1) No. in class taking test	(2) Total score for class	(3) Score per 100 pupils	(4) Number of problems attempted	(5) Number of problems right	(6) Per cent of accuracy
	6	27	111.21	411.9	176.	76.	43.4
B	5	7	13.95	128.	18.	9.	50.
	6	10	28.4	284.	84.	25.	29.8
C	5	55	70.75	128.6	332.	68.	20.6
	6	29	143.24	493.9	236.	133.	56.4
	7	49	291.7	595.3	411.	258.	62.8
	8	59	431.2	730.9	533.	332.	62.3
D	5	27	49.6	185.1	107.	50.	47.
	6	19	52.2	263.	134.	50.	37.
	7	39	330.4	718.	315.	280.	88.
	8	41	345.5	695.	340.	285.	83.
5	See A, B, C, and D.						
6	No report.						
14	5	6	23.7	666.6	37.	23.75	64.2
	6	19	88.25	464.	144.	88.25	60.5
	7	19	148.8	783.	152.	119.	78.
	8	13	97.5	708.	128.	97.5	76.
25	5	8	31.28	391.	55.	23.	41.8
	6	6	20.43	340.5	62.	14.	22.6
	7	5	42.94	858.8	52.	32.	61.6
	8	4	29.06	726.5	44.	24.	54.5
26	No report.						
27	5	7	21.6	308.5	43.	18.	41.8
	6	6	23.7	395.	41.	20.	48.3
	7	12	41.	341.6	53.	36.	67.9
	8	14	53.3	409.2	86.	48.	56.4
28	5	9	13.8	163.	65.	10.	15.
	6	5	24.1	482.	37.	19.	51.
	7	15	85.9	572.	138.	68.	49.
	8	13	117.3	902.	135.	93.	68.
29	No report.						
30	5	12	77.	641.	110.	70.	63.6
	6	8	54.4	680.	83.	41.	49.4
	7	12	83.6	710.6	102.	59.	58.
	8	12	87.	725.	104.	67.	64.4
36	5	5	14.8	296.	46.	12.	26.
	6	8	41.	512.5	71.	36.	50.
	7	5	34.	680.	44.	29.	66.9
	8	13	147.4	1131.5	121.	106.	87.6
37	5	16	47.1	294.4	79.	39.	49.4
	6	10	42.8	428.	56.	34.	60.7
	7	8	45.8	565.	53.	40.	75.5
	8	21	136.	647.6	155.	113.	72.9
38	5	6	28.	466.6	35.	23.	65.7
	6	15	57.	380.	102.	45.	44.1
	7	14	77.4	552.9	102.	65.	63.7
	8	4	38.3	957.5	29.	26.	89.3
39	5	8	18.	225.	49.	14.	28.6
	6	9	47.4	526.4	75.	41.	54.7
	7	6	19.9	331.6	45.	17.	37.7
	8	11	71.1	646.4	92.	60.	65.2
40	5	14	44.7	319.4	83.	34.	41.
	6	18	80.8	449.	142.	65.	45.8
	7	17	118.5	697.	148.	98.	66.2
	8	12	102.8	856.6	107.	89.	83.2
41	5	6	18.6	310.	37.	16.	43.25
	6	7	28.3	404.3	48.	26.	54.16
	7	10	54.1	541.	67.	46.	68.66
	8	3	22.2	740.	27.	16.	59.25
42	5	10	28.2	282.	51.	21.	41.
	6	12	61.4	511.7	86.	53.	61.6
	6	7	41.2	588.5	57.	33.	65.
	8	12	98.3	819.6	105.	78.	74.3
43	5	13	31.	238.5	100.	21.	21.
	6	6	33.5	558.33	38.	28.	74.
	7	8	45.8	572.5	63.	38.	60.33
	8	10	64.	640.	80.	53.	66.25
44	5	4	7.5	187.5	31.	7.	22.5
	6	12	40.8	340.	82.	34.	41.4
	7	6	21.4	428.	34.	19.	56.
	8	7	41.6	594.	48.	29.	60.
45	5	12	39.3	327.	74.	37.	50.
	6	16	73.2	45.7	108.	64.	59.2
	7	14	85.9	612.	94.	60.	63.6
	8	15	69.47	463.	130.	68.	52.3

80 per cent or more of the seventh grade pupils reach or exceed a score of 7.5 with at least 85 per cent accuracy; that 80 per cent or more of the eighth grade pupils reach or exceed a score of 8.75 with at least 90 per cent accuracy."

Column 6 of table 46 indicates that the scores are very much lower than the standards. The total score for the class in column 2 divided by the number in the class in column 1 will give the average unmber of problems solved in each city in each grade. Here again the scores are very low as compared with the standards.

Language and Grammar

The tests in language and grammar are divided into two parts. The first part, test I, is devised for grades 3, 4 and 5. Test II is devised for grades 6, 7 and 8. Each test sheet contains 24 sentences divided into groups with 3 sentences in each group.

The following is the list of instructions taken from page 1 of test 1.

Directions for Giving the Test

Be sure to fill each of the above blanks before you proceed further in this test.

This little test consists of a number of sentences, divided into groups with three sentences in each group.

The first sentence in each group has a blank in which you are to write the proper word. Only one word is to be put in each blank. The second sentence in each group has two words in parenthesis, one of which is wrong. Draw a line through the wrong word. The third sentence has one word and only one, in it that is wrong; find this word, draw a line through it and write the correct word above it.

The following sentences will show you how to play this little game:

Group 1

1. My book .....new.
2. You and (me, I) are more than six years old.
3. I seen three soldiers this morning.

You should put the word "is" or the word "was" in the blank in the first sentence. Draw a line through the word, "me" in the second sentence. Draw a line through the word "seen" in the third sentence and write above it the word "saw."

Ask questions until you are sure you know just what you are to do before your teacher gives you the signal to begin. After you begin your teacher will answer no questions.

ALLOW EXACTLY FIVE MINUTES FOR THE TEST

Have pencils or pens ready before signal is given. When time is up say "STOP" and collect papers at once.

It is to be noted that the difficulty is located in the first sentence in each group, but no suggestion is given as to what word should be inserted. In the second sentence of each group, the difficulty is again located and it is simply a matter of the choice of two words. In the third sentence of each group the difficulty is not located but is left to the child to find and correct. There are, therefore, three different types of problems to be solved in each group. The sentences were chosen to test the pupil's ability to use the proper language forms in simple sentences. They were made to conform somewhat to the studies reported by W. W. Charters in the "Sixteenth Year Book of the National Society for the Study of Education."* It seems to the writer that the tests test the pupil's ability to use the language properly rather than test his general intelligence as some of the language tests seem to do.

The sentences were weighted according to the results of a preliminary test on 1300 pupils in four school systems. The tests are diagnostic in nature and were aimed to give the teacher a better idea of the results of her teaching. While the time was only five minutes, yet it was sufficient for some of the children in all grades to finish all the sentences in the allotted time and in the grades above the fourth, approximately 50 per cent of the pupils finished the work.

In test I, the maximum score that could be made is 52.2 and in test II, the maximum score is 70.9.

Tables 47 to 52 show the scores made in language and grammar. Table No. 47 is read as follows: School No. 25, for instance, had 1 pupil whose score fell between 7 and 7.9; 2 who made a score of from 8 to 9.9; 1 who made a score of from 10 to 11.9, etc.

* Minimal Essentials in Elementary Language and Grammar, Part I, pp. 85-110.

TABLE 47 — **LANGUAGE AND GRAMMAR** — **GRADE 3**

Names of pupils whose scores fall between	A	B	C	D	5	E	F	6	14	25	26	27	28	29	30	36	37	38	39	40	41	42	43	44	45	Total
0 and .9													1												1	2
1 and 1.9																1						1				2
2 and 2.9													1					1			2			1		5
3 and 3.9																	1		2							3
4 and 4.9														1			1					1				3
5 and 5.9	2			1	3																	1	1		1	6
6 and 6.9									1				1	1			2		1							6
7 and 7.9	1				1					1		1	1		2		1	2	1		1		1			12
8 and 9.9	1				1				2	2		1				1	1						1	1		10
10 and 11.9									1	1		1	1		1	1	1		1	3				1	1	13
12 and 13.9												3	2	1		1	3	1		2		3			1	17
14 and 15.9												1	1	1	2		1	2		2				2		12
16 and 17.9	1		2	1	4				1	1		1				1		1		3						12
18 and 20.9	1		3	3	7				1			2	1		2	1	2		1	5	2	1	1	2	2	30
21 and 23.9			1	1	2				3	1		2	2		1		1	1		1	1			2		17
24 and 26.9			1	1	2							1			1									1	2	7
27 and 29.9			1	1	2					1						1		1		1	2	2			1	11
30 and 33.9	1		2	1	4				2	1					1		1				1					10
34 and 37.9				1	1					1										3						5
38 and 41.9				1	1								1							1						3
43 and 45.9																									1	1
46 and 49.9																										
50 and 53.9																										
54 and 57.9																										
58 and 61.9																										
62 and 65.9																										
66 and 70.9																										
Total Number of Children	7		10	11	28				11	9		13	12	4	10	7	15	9	6	21	9	9	4	10	10	187
Median Score	10.		22.5	22.5	20.3				20.	17.		16	13.5	10.5	17.	14.	12.7	15.	7.5	18.6	20.3	13.3	9.	22.5	22.5	16.5

TABLE 48 — **LANGUAGE AND GRAMMAR** — **GRADE 4**

Number of pupils whose scores fall between	A	B	C	D	5	E	F	6	14	25	26	27	28	29	30	36	37	38	39	40	41	42	43	44	45	Total
0 and .9																			1							1
1 and 1.9																							1			1
2 and 2.9																1	1							1		3
3 and 3.9																		1								1
4 and 4.9																	1			1						2
5 and 5.9																										
6 and 6.9			1		1																	1	1			3
7 and 7.9									1								1									2
8 and 9.9									1								1					1			1	4
10 and 11.9			1		1										1				1	1						4
12 and 13.9		1	1	1	3				3								2	1			2		2			14
14 and 15.9		2		2	4						1				1	2		1	1	2			1		2	15
16 and 17.9		2	1	1	4				1	2	1	2	2			1		1	2						1	17
18 and 20.9		2	4	3	9				4	1	1	2	1			1	1	1		2	2	1		1	1	28
21 and 23.9		2	6		8				3			2	1		2	2	1	1	1	1	4	1		1		28
24 and 26.9		2	3	1	6				3	1			1		1		1			1	2	1	1			18
27 and 29.9		2	12	1	15				3			1	1		4	3	3	2	1		2		1			36
30 and 33.9			3		3					1					4		3	2	1	1		2			2	19
34 and 37.9			2	1	3				1	1					2					2		2		2		13
38 and 41.9		1	1		2						1														1	4
43 and 45.9			3		3				1						1			1				1			1	8
46 and 49.9																				1						1
50 and 53.9																										
54 and 57.9																										
58 and 61.9																										
62 and 65.9																										
66 and 70.9																										
Notal number of children		14	38	10	62				21	6	4	7	7		16	10	15	11	8	12	12	10	7	5	9	223
Median score		21.7	27.6	19.5	24.7				23.5	22.5	17.	21.	21.		29.6	21.7	24.	24.	17.5	22.5	22.8	29.5	14.	24.	28.35	22.8

TABLE 49 — **LANGUAGE AND GRAMMAR** — **GRADE 5**

Number of pupils whose scores fall between	A	B	C	D	5	E	F	6	14	25	26	27	28	29	30	36	37	38	39	40	41	42	43	44	45	Total
0 and .9																										
1 and 1.9		1			1																					1
2 and 2.9																										
3 and 3.9																										
4 and 4.9	2				2																					2
5 and 5.9																										
6 and 6.9																										
7 and 7.9																										
8 and 9.9	1		1		2																1					3
10 and 11.9	1				1						1									1		1		2		6
12 and 13.9	1		1	1	3																1		2			6
14 and 15.9	1	1		1	3										1			1					1			6
16 and 17.9			1	1	2								2				3		1	1		1	1			11
18 and 20.9	5		2	4	11				2	1				2		1				1			1		3	22
21 and 23.9	1	1	4	3	9				2			1	1	1			2		3	1	1	2	2	1		26
24 and 26.9	2	1	5	4	12					2			1	2			2	1	1	1	1	1	1		1	26
27 and 29.9	2	1	7	3	13					1		1			2	1	1			2	2	5	1	1	3	33
30 and 33.9	1	2	17	2	22				1	2	1	3	3	1	3	1	1		1	4	1		3	1		48
34 and 37.9	4		9	4	17				1		2		2	1	3	1	3	1	1	1	1				2	36
38 and 41.9	2	2	6	2	13				2					1	1	1		2							2	23
42 and 45.9	2		4	2	8						3	2		1											1	15
46 and 49.9		1	1	1	3					2		1			1	1				1					2	11
50 and 53.9			1		1										2											3
54 and 57.9																										
58 and 61.9																										
62 and 65.9																										
66 and 70.0																										
Total number of children	25	10	69	29	123				8	8	7	8	9	9	13	5	14	6	8	12	8	10	13	3	14	278
Median score	25.5	31.	32.5	28.5	30.5				29.	32.	37.	33.4	32.	27.	34.6	34.	26.3	38.7	23.5	32.	29.3	27.6	22.5	30.	33.	27.9

TABLE 50 — **LANGUAGE AND GRAMMAR** — **GRADE 6**

Number of pupils whose scores fall between	A	B	C	D	5	E	F	6	14	25	26	27	28	29	30	36	37	38	39	40	41	42	43	44	45	Total
0 and .9																	1		1		1		1			4
1 and 1.9																										
2 and 2.9			1	1	2				1								1					2	1			7
3 and 3.9										1									1	1						3
4 and 4.9	1	1			2																					2
5 and 5.9	2	1			3				3								2	4			1		1			14
6 and 6.9			1		1				1								1			2						5
7 and 7.9	1		1		2														1	1						4
8 and 9.9	2	2	1		5				2								3	3				4				17
10 and 11.9	5	2	3	1	11								1		1		2	1		2	1	3	1			23
12 and 13.9	2	1	1		4								1	2				1	1	1		1				11
14 and 15.9	3		4	1	8				2	2							2		2	2			1			19
16 and 17.9	3		1	1	5				1			2			1		1	1	2	2						16
18 and 20.9	4		2	3	9				1			1				1	1	1	1		2		1			18
21 and 23.9	1	1	6	3	10				2	2			1	1		2	1			1						21
24 and 26.9	3	2		2	7				3	1					1	1				2	1	2				18
27 and 29.9	1	1	1	1	4				2			2	2	1	1			1								13
30 and 33.9	1		1	2	4									1	2	1					1					9
34 and 37.9			2	2	4				1							2		1		1						9
38 and 41.9				3	3				1						1					2						7
42 and 45.9			1		1										1	1										3
50 and 63.9																										
54 and 57.9																										
58 and 61.9																										
62 and 65.9																										
66 and 70.0																										
Total number of children	29	11	26	20	86				20	6		5	5	5	8	8	15	13	9	17	7	12	6			222
Median score	15.3	12.	17.	22.5	18.1				19.	18.5		21.	24.	24.	31.	30.6	10.	9.4	20.7	19.5	21.8	11.	9.			16.1

TABLE 51 — **LANGUAGE AND GRAMMAR** — **GRADE 7**

Number of pupils whose scores fall between	A	B	C	D	5	E	F	6	14	25	26	27	28	29	30	36	37	38	39	40	41	42	43	44	45	Total
0 and .9																										
1 and 1.9																										
2 and 2.9			1		1																			1		2
3 and 3.9																			1							1
4 and 4.9				1	1																					1
5 and 5.9																		1			1		1			3
6 and 6.9																								1		1
7 and 7.9			2		2												1									3
8 and 9.9			2		2				1				1					1			1	1	1	1	1	10
10 and 11.9			4		4								1				3		1	1	1			1	1	13
12 and 13.9			1		1				1	1	1	2	1		2				1	2	1	1			3	17
14 and 16.9			3	2	5								2				1	1	3	4	1	1			3	21
16 and 17.9			6	5	10				2			1	3					1	1		1		2			21
18 and 20.9			5	5	10				1	1	1	1	2					2		2		1	1	1	1	24
21 and 23.9			2	2	4				2			2	1		2	2		1		2	1		2			19
24 and 26.9			7	4	11				2		1	2				2	1	1		2			1		1	24
27 and 29.9			5	4	9				2						1	1		2		2		1			1	19
30 and 33.9			4	5	9				3		1	1	1		2	1	2			1	1	1			2	25
34 and 37.9			5	4	9				4	1					3			1		2		1			3	24
38 and 41.9			1	2	3				2																	6
42 and 45.9				4	4					1			2					1		1	1					10
46 and 49.9				3	3				1												1					5
50 and 53.9															1											1
54 and 57.9																										
58 and 61.9																										
62 and 65.9																										
66 and 70.0																										
Total number of children			47	41	88				21	4	4	10	14		11	6	8	12	6	19	10	7	8	5	16	249
Median score			22.6	28.5	25.1				36.1	29.5	27.5	21.7	17.6		31.5	26.2	14.	22.5	14.5	22.5	17.	21.	19.5	10.	18.6	21.4

TABLE 52 — **LANGUAGE AND GRAMMAR** — **GRADE 8**

Number of pupils whose scores fall between	A	B	C	D	5	E	F	6	14	25	26	27	28	29	30	36	37	38	39	40	41	42	43	44	45	Total
0 and .9																										
1 and 1.9																										
2 and 2.9																						1	1			2
3 and 3.9																										
4 and 4.9																										
5 and 5.9			1		1															1						2
6 and 6.9																				1						1
7. and 7.9																	1					1				2
8 and 8.9			3		3					1							2						1		3	10
10 and 11.9				1	1														2				1	1		5
12 and 13.9			3	1	4				1		1	1			1	1	1	1	1							12
14 and 15.9				1	1				1			1	1		1		1			1		1	1	1		10
16 and 17.9				2	2							3	1		1		1			1	1	1		2		13
18 and 20.9			7	3	10				2	1	4	2	1				2			1			1		1	25
21 and 23.9			9	6	15					3	1		3		2		2	1	1	1	1	1		2	1	34
24 and 26.9			4	6	10				1				2		2	1	2		1			2		1	2	24
27 and 29.9			6	6	12				4			1					1		3	2	1				1	25
30 and 33.9			5	7	12					1		2			1	4	4	2	1			3			2	32
34 and 37.9			5	3	8				2						1	2	2		2	1			2		2	22
38 and 41.9			2	3	5				1			1	1		3	1	1			1					3	17
42 and 45.9			4	1	5							1				1						1	2			10
46 and 49.9			6		6								1							1			1			9
50 and 53.9				3	3								2			2										7
54 and 57.9			1		1							2										1				4
68 and 61.9			2		2												1	1								4
62 and 65.9																										
66 and 70.9																										
Total number of children			58	43	101				12	6	6	14	12		12	13	21	4	11	11	3	12	10	7	15	270
Median score			28.2	28.	28.				28.1	22.5	19.8	22.5	24.7		26.2	36.	25.5	28.	28.	24.	24.	26.2	28.5	18.	30.	24.7

The median scores for grades 3, 4 and 5 for the county are 16.5, 22.8 and 27.9 respectively with 52.2 as the highest possible score that could be made. This indicates that much less than forty per cent of the sentences were done correctly. The median scores, as shown by the tables, for grades 6, 7 and 8 are 16.1, 21.4 and 24.7 respectively with 70.9 as the highest possible score that could be made. Here the scores are relatively lower than in grades 3, 4 and 5. In view of the fact that the sentence were simple and the language forms called for were so common we might, at first thought, expect the scores should have been higher. The test reveals the same fact that is brought out in the other subjects that more drill and effort should be concentrated on the common every-day expressions rather than on the more technical and less frequent language forms. The drill should be carried to the point where the child not only knows the correct form but his language habits will function properly when his mind is not especially focussed on his mode of expression.

Reading

Tables 53 to 58 inclusive record the scores made on the Kansas Silent Reading test devised by Dr. Kelly.

The median scores for the county compare rather favorably with the standard scores published by Dr. Kelly. A glance at the individual scores for the various schools, however, shows wide variation among them. In some cases the scores of some schools are almost three times those of other schools. This indicates a great difference among the school children in their ability to read. There seems to be no marked difference between districts of the first, second and third classes as to their ability to read. The two-room rural schools, (No. 45 in the tables) as in the other subjects, make a relatively high score.

TABLE 53 — READING — GRADE 3

Number of pupils whose scores fall between	A	B	C	D	5	E	F	6	14	25	26	27	28	29	30	36	37	38	39	40	41	42	43	44	45	Total
0 and .9			1		1		2	2	2			3			1	3	2	4	1		2	1		1	1	24
1 and 1.9	1			1	2		0					1	1		3		2		1			1	2	2	1	16
2 and 2.9			1	1	2	3	1	4	1			1	1				2	2	2	2			2	1		20
3 and 3.9	1		1		2	2	5	7	2	2		3	2	1			2	1		3	1					26
4 and 4.9	1			2	3	2	3	5	2	2				1		1	1	1		1	1		1	1		21
5 and 6.9			2	6	8	6	9	15	4	2		5	2	2	2	1	3		1	7	2	2		3	3	62
7 and 8.9	2		3	1	6	3	5	8		2			4		3		3	1		2	1	3			3	36
9 and 10.9			1		1	4	4	8					1			1		1		2						14
11 and 12.9	1				1	5	4	9		1			1							1					1	15
13 and 14.9			1	1	2	5	2	7					2							2	1					14
15 and 17.9			1		1	1	2	3										1			1					6
18 and 20.9						2	1	3																		3
21 and 23.9							1	1																		1
24 and 26.9																										
27 and 29.9																										
30 and 34.9																										
35 and 39.9																										
44 and 44.9																										
45 and 49.9																										
50 and 59.9																										
60 and 69.9																										
70 and 79.9																										
80 and above																										
Total Number of Children	6		11	12	29	33	39	72	11	9		13	14	4	9	6	15	11	6	19	9	8	4	9	10	258
Median Score	6.5		7.6	5.8	6.2	9.5	7.	7.8	4.5	6		3.6	7.7	5.5	6.	4.	4.	3.	2.7	6.4	6.	6.5	2.2	5.	6.6	5.7

TABLE 54 — READING — GRADE 4

Number of pupils whose scores fall between	A	B	C	D	5	E	F	6	14	25	26	27	28	29	30	36	37	38	39	40	41	42	43	44	45	Total
0 and .9			1	1	2	1		1				2				1	1	1		1	1		1			11
1 and 1.9			1		1												1	1	2	1			1		1	8
2 and 2.9			1		1		1	1	2						2			1	1			1		1		10
3 and 3.9			3	1	4		3	3									1	1			1					10
4 and 4.9			2		2		2	2	3	1	1	1	1		2	1	1	3	1	1		1	3		1	25
5 and 6.9		5	3	1	9	2	4	6	5	2	1	2			2	1	4	4	1	3	2	1		2	2	47
7 and 88.9		2	7	4	13	5	4	9	1	2	1	2				2	1	2			3	2		1		39
9 and 10.9		1	6	2	9	6	3	9	7			1	1		2	1	4	1	1	2	2	3	1		1	45
11 and 12.9			10	1	11	4	5	9	2	1	1		1			1		1	1		1			1	1	31
13 and 14.9		3	1	2	6	14	1	15							3	1	1	1		2	1	1	1	1	1	34
15 and 17.9		3	2	1	6	7	5	12	1				1		2	1	1		1		1	1			1	28
18 and 20.9			3		3	3	4	7					1							1						12
21 and 23.9															1										1	2
24 and 26.9															1										1	2
27 and 29.9															1											1
30 and 34.9															1											1
35 and 39.9																										
40 and 44.9																										
45 and 49.9																										
50 and 59.9																										
60 and 69.9																										
70 and 79.9																										
80 and above																										
Total Number of Children		14	40	13	67	42	32	74	21	6	4	8	5		17	9	15	16	8	11	12	10	7	6	10	306
Median Score		10.	9.8	9.	9.4	13.4	10.1	12.5	9.	7.5	8.	6.5	13.		14.	9.	7.	6.2	6.	7.	8.7	9.3	4.6	8.	12.	9.1

TABLE 55 — **READING** — **GRADE 5**

Number of pupils whose scores fall between	A	B	C	D	5	E	F	6	14	25	26	27	28	29	30	36	37	38	39	40	41	42	43	44	45	Total
0 and .9		1	1	1	3																					3
1 and 1.9				1	1								1													2
2 and 2.9	1				1											1	1									3
3 and 3.9			2		2							2							1							5
4 and 4.9	2		1		3	1	1	2				1				1	1		1		1	1	1			12
5 and 6.9	8	1	6	3	18	3		3				1		1			2	2			2	5	3	1		38
7 and 8.9	1	2	2	3	8	1	1	2		1	2	3		1					1	2	1		4			25
9 and 10.9	2	1	10	3	16	1	1	2			1	1	1	1		1	3	1	1	2			1		1	32
11 and 12.9	3	1	5	5	14		1	1	2				1	3	2			1	3	2		2	3		5	39
13 and 14.9	5	1	12	6	24	6	11	17	3	2			2	2	1		4	3	1	6		1	1	3		70
15 and 17.9	4		12	2	18	8	7	15	4	4	3		2	1	1						1	2			1	52
18 and 20.9	2	3	6	3	14	2	8	10		1			1		1		3	1			2				7	40
21 and 23.9	1		1		2	2	7	9					1			2										14
24 and 26.9			1		1		1	1			1			1	5						1					10
27 and 29.9				1	1		1	1							2											4
30 and 34.9																										
35 and 39.9																										
40 and 44.9																										
45 and 49.9																										
50 and 59.9																										
60 and 69.9																										
70 and 79.9																										
80 and above																										
Total Number of Children	29	10	59	28	126	24	39	63	9	8	7	3	9	10	12	5	14	8	8	12	8	11	13	4	14	349
Median Score	11.6	12.	13.5	12.4	12.6	15.1	20.6	16.	15.	16.1	16.	7.3	15.	12.6	21.6	11.	12.2	13.3	11.3	13.2	13.5	7.	8.5	13.9	18.2	11.7

TABLE 56 — **READING** — **GRADE 6**

Number of pupils whose scores fall between	A	B	C	D	5	E	F	6	14	25	26	27	28	29	30	36	37	38	39	40	41	42	43	44	45	Total
0 and .9																										
1 and 1.9																		1								1
2 and 2.9																1	2		1							4
3 and 3.9									2											1			1	1		5
4 and 4.9				1	1		1	1							1			1				1		1	1	7
5 and 6.9	1	2	2	1	6	2	1	3				1	1				1	1	1	1	1	1	1		1	19
7 and 8.9	1	2		1	4	3	1	4				2			1	1		4	1	1		1	2	4	3	28
9 and 10.9	4	1	2	1	8	2	3	5	3	2				1	2	1	3	3	3	3	1	4		1	1	43
11 and 12.9	6	2	2	2	12		1	1	2	1			1			1	3		2	3	1	3		3	7	40
13 and 14.9	2	1	2	3	8	2	2	4	3	1			1				1			1	4	1	1		1	26
15 and 17.9	4	1	6	1	12	3	2	5	6	2			1	1	1	2	4	2	1	1	1	1		1	4	45
18 and 20.9	3	2	6	7	18	4	4	8	3			1	1	2	2	1		1		1				2	1	41
21 and 23.9	1		7	2	10	4	7	11	1								1			2			1			26
24 and 26.9	3				3	7	4	11							1											15
27 and 29.9	2			1	3	4	3	7																		10
30 and 34.9	1		2		3	3	3	6	1																	10
35 and 39.9						2		2				1				1										4
40 and 44.9																										
45 and 49.9																										
50 and 59.9																										
60 and 69.9																										
70 and 79.9																										
80 and above																										
Total Number of Children	28	11	29	20	88	36	32	68	21	6		5	5	4	8	8	15	13	9	14	8	12	6	13	19	322
Median Score	15.3	12.	18.5	18.2	16.3	23.3	22.	22.2	15.5	14.		9.	15.	18.7	13.	14.7	12.3	9.	10.3	11.7	13.7	10.6	8.5	11.	12.5	14.2

TABLE 57 — READING — GRADE 7

Number of pupils whose scores fall between

	A	B	C	D	5	E	F	6	14	25	26	27	28	29	30	36	37	38	39	40	41	42	43	44	45	Total
0 and .9																								1		1
1 and 1.9																										
2 and 2.9										1			1													2
2 and 2.9									1																	4
3 and 3.9			2		2						1	1													1	2
4 and 4.9									1						1					1	1	1				10
5 and 6.9			2	2	4	1		1	1								1	2	1	1	1		2		2	15
7 and 8.9			2		2	2		2			1		2				1	2	1	2	1		1	1	1	28
9 and 10.9			7	2	9	1		1	2		1	3	2					2	1	3	3		1	1	1	31
11 and 12.9			4	5	9	4		4		3		1	1		2			1		1					3	32
13 and 14.9			8	3	11	10		10	2			1			3	1	2	6		3		2	3	1	3	57
15 and 17.9			2	5	7	16		16	8	1		1	4		3		3	3	2	1	1	2	1	1	1	66
18 and 20.9			7	9	16	16		16	8			4	3			2		2	2	1	2	2			3	37
21 and 23.9			4	5	9	11		11					1			2	1			3	1				1	33
24 and 26.9			3	6	9	14		14		1					2											12
27 and 29.9			2	2	4	6		6							2				1							16
30 and 34.9			3	2	5	7		7			1															3
35 and39.9						3		3																		
40 and 44.9																										1
45 and 49.9						1		1																		
50 and 59.9																										
60 and 69.9																										
70 and 79.9																										
80 and above																										
Total Number of Children			46	41	87	92		92	23	5	4	11	14		13	5	8	18	7	17	10	7	8	5	16	350
Median Score			14.6	19.3	18.	20.3		20.3	16.8	13.	10.	15.	19.1		19.	24.	18.5	16.1	19.5	16.	12.6	19.5	14.	13.	15.5	18.0

TABLE 58 — READING — GRADE 8

Number of pupils whose scores fall between

	A	B	C	D	5	E	F	6	14	25	26	27	28	29	30	36	37	38	39	40	41	42	43	44	45	Total
0 and .9																							1			1
1 and 1.9																										
2 and 2.9																						1				1
3 and 3.9																										
4 and 4.9			1		1						1															2
5 and 6.9			4	1	5	1							2												2	10
7 and 8.9			6	2	8							1					1					1		1	1	13
9 and 10.9			5	9	14							2			1	1	2	2	1				1	1		25
11 and 12.9			6	2	8	1			1			1					5		2				2		1	21
13 and 14.9			9	5	14	8			2			2	3		2		3	3	1		1		1	1		41
15 and 17.9			8	7	15	4			3		1	4			2		4		1	1		2	3	2	2	43
18 and 20.9			10	4	14	8			2		1	2	2		3	2	1		4	2	1	5	2		2	51
21 and 23.9			5	4	9	8			4	4		1	1		3	2	1			4	1	2		2	2	44
24 and 26.9			6	3	9	6					1					3	2	2	1	1					1	26
27 and 29.9			3	1	4	3			1		1	1			1	3									2	15
30 and 34.9				4	4	7					1		5		1	2	1					1			2	24
35 and 39.9						1											1									2
40 and 44.9						1							1		1	1										4
50 and 69.9																										2
60 and 69.9																										
70 and 79.9																										
80 and above																										
Total Number of Children			63	42	105	49			14	4	6	14	14		12	14	21	7	10	8	3	12	10	7	15	325
Median Score			15.3	16.	15.6	22.1			20.2	22.8	24.	16.1	22.5		20.	20.5	15.	14.3	18.3	22.1	21.	19.5	18.5	16.5	21.	18.5

Table 59 shows the median scores for Jackson county as compared with the standard scores published by Dr. Kelly.

TABLE 59

GRADE	3	4	5	6	7	8
Standard scores	5.3	9.5	13.2	13.9	16.2	19.2
Jackson county scores	5.7	9.1	11.7	14.2	18.	18.5

Handwriting

The Gettysburg edition of the Ayers Handwriting scale was used in testing the handwriting. The scale consists of eight samples of handwriting. The poorest sample is given a quality value of 20 and the last sample a value of 90. The teachers were given the following instructions to secure the samples of writing to be scored: "To secure samples of handwriting the teacher should write on the board the first three sentences of Lincoln's Gettysburg address and have the pupils read the copy until familiar with it. They should then copy it, beginning at a given signal and writing for precisely two minutes. They should write in ink on ruled paper. To score samples slide each specimen along the scale until a writing of the same quality is found. The number at the top of the scale above this shows the value of the writing being measured. Disregard differences in style, but try to find on the scale the quality corresponding with that of the sample being scored. With practice, the scorer will develop the ability to recognize qualities more rapidly and with increasing accuracy. If the scoring is done twice, the results will be considerably more accurate than if done only once. The procedure may be as follows: Score samples and distribute them in piles with all the 20's in one pile, all the 30's in another, and so on. Mark these values on the backs of the papers, then shuffle the samples and score them a second time. Finally make careful decisions to overcome any disagreements in the two scorings."

Table 60 records the speed and quality of the handwriting for grades 3 to 8 inclusive in Jackson county.

Table 60 is read as follows: The figures and letters at the left indicate the number of the school. The figures in the vertical column under "S" indicate the average number of words written per minute. Those under "Q" the quality, and the last vertical column under each grade the number of pupils in the grade. Thus in School "B" the average speed was 32 words per minute, the quality 34 and the number of pupils 2. In the fourth grade

the speed is 40 the quality is 38 and the number of pupils in the class is 14 and so on. In general we may say that quality is sacrificed for speed. Some schools develop high speed but the quality is so low that it could not be recorded on the scale as devised by Dr. Ayers. This table indicates that more emphasis should be placed on quality to bring the handwriting up to the standard.

HANDWRITING **TABLE 60**

No. of school	Grade 3			Grade 4			Grade 5			Grade 6			Grade 7			Grade 8		
	S.	Q.	No.	S.	Q.	No.	S.	Q.	No.	S.	Q.	No.	S.	Q.	No.	S.	Q.	No.
A							64	44	27	84	60	29						
B	32	34	2	40	38	14	36	36	11	36	46	11						
C	32	28	2	40	40	40	46	40	56	52	28	28	60	50	49	84	46	60
D	52	44	13	58	48	10	50	46	29	52	43	20	60	52	43	44	54	42
5																		
E				46	40	58	64	30	41	60	34	77	72	40	46	83	55	58
F	47	33	42	53	34	44	46	40	35	73	35	32						
6																		
14	40	31	8	50	32	18	67	42	6	59	58	17	66	52	20	68	43	8
25							64	52	8	68	34	6	71	58	5	80	72	38
26																		
27	61	31	11	73	31	7	70	32	6	85	34	6	78	60	10	85	34	14
28	41	30	12	47	30	6	61	38	9	63	61	5	79	37	13	81	43	13
29	40	32	6	58	38	9	76	40	10	82	56	5	77	48	4	77	64	10
30	50	30	11	62	40	20	78	35	15	87	40	8	77	66	12	96	59	14
36	32	40	6	37	40	8	90	34	4	88	50	4	86	52	7	90	61	13
37	34	20	11	52	40	10	61	40	8	72	60	13	86	49	8	87	50	14
38	42	29	5	46	40	11	76	50	6	66	40	12	84	50	10	78	50	3
39	30	25	4	53	40	9	70	30	6	89	40	7	80	50	9	85	60	7
40	34	28	13	62	40	11	55	40	13	81	40	14	84	55	16	73	60	10
41	32	40	1	62	20	1	76	50	4	88	50	2	66	60	3	68	54	2
42	49	30	4	66	40	11	73	40	11	85	40	8	82	60	6	86	60	8
43	42	40	3	67	40	5	88	40	13	84	40	6	86	50	8	96	60	11
44	46	20	5	60	30	3	98	46	4	77	55	12	92	50	3	80	60	7
45	42	30	10	56	40	10	46	35	14	86	60	19	101	40	16	88	80	15

The standard scores which is the average speed and quality, reported by Dr. Ayres are as follows:

Grade	Speed	Quality
2	31	38
3	44	42
4	55	46
5	64	50
6	71	54
7	76	58
8	79	62

The scores of handwriting vary a great deal both as to speed and quality. In speed, for instance, according to Dr. Ayres, we should expect to find the following distribution per each hundred pupils in the fifth grade:

Speed	10 to 19	20 to 29	30 to 39	40 to 49	50 to 59	60 to 69	70 to 79	80 to 89	90 to 99	100 to 109
Number of pupils	1	2	5	12	20	22	19	12	5	2

QUALITY FOR FIFTH GRADE

Quality	10	20	30	40	50	60	70	80	90
Number of pupils	1	4	12	21	24	21	12	4	1

These tables are read as follows: 1 pupil would be expeeted to write with a speed of from 10 to 19 words per minute, 2 with a speed of from 20 to 29 words per minute, and so on.

In quality, 1 pupil will write quality 10; 4 quality 20, and so on.

Spelling—Jackson County

Table 61 records the work in spelling in the Jackson County schools. The spelling tests were divided into three divisions, the third and fourth grades spelling one group of words, the fifth and sixth grades spelling another group, and the seventh and eighth grades spelling a third group. Forty words were given to each grade, twenty of which were to be spelled in columns and twenty were to be spelled in sentences. Ten sentences were dictated, one every thirty seconds, and each sentence contained two words which were to be checked by the individual grading of the papers.

Table 61 is read as follows: In school A, grade 3, there were eight pupils who took the test. The average number of words spelled in sentences was 12; the average number spelled in column was 14.5. In grade 3 there were 25 pupils who took the test, the average number of words spelled correctly in sentences was 14 and columns 14, and so on.

It is to be noted that the average number of words spelled correctly in sentences is less than in columns. In some schools the difference is quite marked. The words were taken from the Ayres spelling scale. Those from grades 3 and 4 were taken from column "L" of the scale. To be up to the standard the third greda should have spelled 73 per cent of the words eorreetly, and the fourth grade 88 per cent. The words for grades 5 and 6 were taken from column "I" of the scale and the standard is 73 per cent and 84 per cent, respectively. The words for grades 7 and 8 came from column "U" of the scale with the standard 73 per cent and 84 per cent respectively. The approximate standing of the various schools may be compared to the standard by converting the average number of words spelled into per eent.

JACKSON COUNTY SCHOOLS **SPELLING** **TABLE 61**

GRADES	3			4			5			6			7			8		
	No.	S.	C.	No.	S.	C.	No.	S.	C.	No.	S.	C.	No.	S.	C.	No.	S.	C.
a	8	12.	14.5				26	14.	14.	28	15.	15.						
b				14	17.	18.5	10	12.	14.5	11	12.	16.						
c	10	16.5	18.	38	15.	18.	59	12.	15.	27	16.	17.	47	9.	11.	57	13.	15.
d	12	14.	16.	11	18.	19.	30	10.	12.	19	15.	15.	43	12.	12.	43	14.	14.
5																		
e	33	13.	15.	41	18.	19.	24	13.	14.	36	16.5	19.5	89	13.	15.5	48	15.	17.
f	37	13.	15.	45	18.	19.	38	13.	16.	30	17.	18.						
6																		
14	11	5.	15.	21	16.	15.	7	10.	14.	16	14.	15.	21	13.	16.	14	14.	15.5
25	9	11.	14.	6	19.6	19.5	8	15.	16.	8	17.	18.	6	19.	17.	13	18.	16.
26				4	16.	16.5	6	7.5	12.					9.	10.6		9.	12.
27	10	12.	15.	8	13.5	15.	8	8.	13.	6	15.5	16.5	11	9.	11.	14	13.	14.
28	11	10.	10.	6	17.	20.	9	12.	14.	6	18.	16.	15	9.	13.	14	18.5	18.
29																		
30	9	8.	9.	16	17.5	18.5	12	19.	20.	8	18.5	19.5	11	14.	15.	12	18.	16.
36	6	12.	12.	11	18.	18.	6	15.	16.	8	17.	18.	6	19.	17.	13	18.	16.
37	15	13.	15.	15	16.	18.	14	10.	19.	16	16.	18.	8	17.	15.	21	16.	18.
38	9	11.	16.	11	12.	19.	8	18.	18.	16	16.	18.	12	11.	10.	4	15.	13.
39	6	10.	8.	8	16.	18.	8	7.5	13.	9	17.	17.	6	9.	11.	11	15.	15.
40	14	14.	16	10	14.	15.	8	11.	13.5	15	14.	16.	19	11.	12.	9	17.	15.
41	9	12.	13.5	11	15.6	19.	9	11.5	14.5	7	17.	17.	10	9.	12.5	3	14.	18.
42	7	13.	17.	9	18.	18.	10	10.5	14.5	12	12.5	16.	7	11.	10.	12	14.	17.5
43	4	10.	17.	7	7.	14.	13	6.	10.	5	9.	13.	8	9.	9.	10	15.5	18.
44	7	17.	19.	5	16.	17.	4	9.	14.5	15	10.	13.	5	10.	13.	.7	10.	12.
45	6	12.	16.	8	18.	19.5	14	11.5	14.5	15	12.	15.	16.	12.	13.	13	17.	19.

STATE AND JACKSON COUNTY MEDIAN SCORES IN ARITHMETIC

Table 62 shows the median scores in both speed and accuracy in the four fundamentals in arithmetic for Jackson county and the state of Oregon. The former includes about 80 rural schools. They rank quite favorably with the state scores which seems to indicate that the four fundamentals are being taught about as well in the rural schools as in the graded systems.

TABLE 62

ADDITION

GRADE	3		4		5		6		7		8	
	S.	A.	S.	A.	S.	A.	S.	A.	S.	A.	S.	A.
Jackson county			5.9	42.6	6.9	51.9	7.9	53.7	8.6	60.7	8.9	68.4
State	5.2	35.1	5.	41.8	6.9	51.2	7.7	54.3	8.3	59.6	8.9	62.4

SUBTRACTION

Jackson county	4.6	36.1	5.9	49.6	7.4	63.4	8.6	65.5	9.4	79.4	10.8	81.5
State	4.4	39.6	6.2	53.7	7.7	66.1	7.6	68.9	9.8	76.5	11.	72.6

MULTIPLICATION

Jackson county			5.3	49.6	5.4	60.2	7.4	61.5	8.3	62.8	9.6	87.4
State			5.2	50.	6.5	59.8	7.4	60.7	8.6	76.1	9.8	73.7

DIVISION

Jackson county			3.4	40.3	4.6	58.6	6.4	66.5	7.4	82.2	8.7	87.
State			3.6	42.5	4.9	56.7	6.1	67.4	7.7	77.3	9.4	82.5

STATE SCORES

Tables 63 to 70 inclusive show the scores in arithmetic in the four fundamentals for the state of Oregon. The first nine schools are districts of the first class. The next fifteen are districts of the second class and the remainder are districts of the third class and rural schools as shown on page 2 of this bulletin. Table 63 is read as follows: School No. 1 had 53 pupils in the third grade. The median score in speed was 6.6 problems; the median score in accuracy was 54.5 and so on. The low percentage in accuracy is very striking. In the third grade, for instance, the median accuracy for the state is 35.1. This means that half the children of the cities tested solved about one problem in three correctly or less. It is to be noted that the accuracy in districts of the first class is not strikingly different from those of the second and third classes and rural schools.

Table No. 71 records the scores in languages and grammar for the state. The median scores made may be taken as tentative standard scores.

Table 72 records the scores in reading for both the grades and the high schools. The standard scores as reported by Dr. Kelly and the Oregon state scores are given here for convenience in making comparisons.

Grades	III	IV	V	VI	VII	VIII	IX	X	XI	XII
Standard scores	5.3	9.5	13.2	13.9	16.2	19.2	22.9	25.6	26.5	29.7
Oregon scores	5.6	10.1	13.9	14.5	17.1	15.3	20.5	25.3	25.9	28.1

TABLE 63 **ARITHMETIC—Addition**

No. of school	Grade III			Grade IV			Grade V		
	Number pupils	Speed M.S.	Acc. M.S.	Number pupils	Speed M.S.	Acc. M.S.	Number pupils	Speed M.S.	Acc. M.S.
1	59	6.6	64.6	58	6.8	42.6	51	7.3	51.
2	....	.. ..	.... ..	....	.. ..	.... ..	....	.. ..	.. ..
3	36	6.7	39.1	62	6.	38.2	63	7.8	42.1
4	120	7.4	32.9	125	7.6	42.	167	7.6	48.3
5	30	3.6	35.7	64	6.2	47.	123	6.8	68.1
6	33	4.9	34.	87	5.3	52.8	62	6.1	60.
7	83	3.8	37.6	60	5.8	42.8	87	7.	61.4
8	227	4.8	40.7	262	6.	51.4	235	7.8	57.2
9	119	5.6	33.7	135	6.8	40.	121	7.4	54.2
10	....	.. ..	.... ..	7	6.3	55.	16	6.	40.
11	....	.. ..	.... ..	....	.. ..	.... ..	....	.. ..	.... ..
12	....	.. ..	.... ..	22	5.3	30.5	28	5.4	38.6
13	61	3.6	34.	57	5.4	42.4	45	4.7	65.
14	11	6.1	67.5	11	8.2	33.3	20	6.4	35.7
15	27	5.1	60.	27	5.7	36.8	41	6.2	55.5
15	27	5.1	50.	27	5.7	36.8	41	6.2	55.5
17	20	4.3	27.7	61	5.7	33.6	66	6.7	47.1
18	28	4.	30.4	29	4.	30.	26	4.5	55.5
19	66	4.5	28.4	24	4.6	37.5	27	6.6	41.1
20	....	.. ..	.... ..	....	.. ..	.... ..	....	.. ..	.... ..
21	28	4.6	29.1	27	4.	38.8	42	6.7	60.
22	....	.. ..	.... ..	....	.. ..	.... ..	....	.. ..	.... ..
23	15	4.7	36.3	29	5.	41.6	17	7.3	45.
24	....	.. ..	.... ..	....	.. ..	.... ..	....	.. ..	.... ..
25	9	6.3	41.6	6	7.	50.	8	6.	70.
26	....	.. ..	.... ..	4	6.	25.	7	8.3	28.5
27	13	5.3	38.8	8	6.5	60.	8	5.6	28.5
28	....	.. ..	.... ..	4	6.6	60.	9	7.	57.5
29	5	3.	50.	8	8.	60.	10	5.5	60.
30	9	3.5	35.5	16	6.2	44.	13	6.6	50.
31	8	3.5	53.3	23	5.	57.5	25	6.8	50.
32	9	5.5	60.	16	6.2	36.3	12	4.	33.3
33	14	4.6	29.1	....	.. ..	.... ..	11	7.	37.5
34	8	2.6	25.	10	3.	31.2	9	5.5	50.
35	10	4.	31.2	7	6.	50.	6	7.	50.
36	8	6.2	25.	11	7.3	42.8	6	10.5	55.
37	15	4.5	26.6	15	7.4	33.3	19	8.	38.4
38	11	5.	37.5	14	6.	26.9	8	6.6	33.3
39	6	5.5	30.	8	6.	25.	8	6.2	28.5
40	18	5.7	30.	12	5.7	37.5	12	5.8	37.5
41	9	4.	41.6	11	7.	52.5	9	5.	52.5
42	9	4.7	31.2	9	6.2	35.2	10	6.5	35.7
43	4	3.	25.	7	5.5	33.3	10	6.6	35.
44	9	4.7	27.7	6	6.	30.	4	8.	50.
45	11	6.8	30.	9	9.	50.	14	7.6	62.5
46	18	5.7	49.	13	6.2	35.	12	6.	37.5
47	15	5.	28.5	22	6.6	42.3	17	6.	32.1
48	9	5.	27.7	8	4.3	28.5	9	7.5	50.
49	....	.. ..	.... ..	....	.. ..	.... ..	....	.. ..	.... ..
50	....	.. ..	.... ..	....	.. ..	.... ..	....	.. ..	.... ..
State	1190	5.2	35.1	1384	6.	41.8	1493	6.9	51.2

TABLE 64 **ARITHMETIC—Addition**

	Grade VI			Grade VII			Grade VIII		
No. of school	Number pupils	Speed M.S.	Acc. M.S.	Number pupils	Speed M.S.	Acc. M.S.	Number pupils	Speed M.S.	Acc. M.S.
1	39	7.	40.	46	7.9	59.	44	8.6	55.
2	....	.. ..	.... ..	....	.. ..	.... ..	....	.. ..	.... ..
3	40	7.5	41.6	....	.. ..	.... ..	....	.. ..	.... ..
4	154	8.4	51.7	103	9.2	48.1	111	9.6	53.7
5	87	6.8	53.1	91	8.8	86.9	101	8.4	86.6
6	68	7.7	54.	90	6.9	58.9	49	7.6	72.
7	71	8.9	61.2	67	8.5	57.8	75	8.5	57.5
8	204	8.1	61.6	177	8.3	63.3	154	8.9	66.
9	94	8.2	55.3	98	8.8	55.3	103	10.7	63.7
10	24	6.8	70.	6	6.	60.	8	9.6	60.
11	....	.. ..	.... ..	....	.. ..	.... ..	..	.. ..	.... ..
12	19	6.8	53.3	17	8.7	60.	23	8.5	50.
13	38	7.5	50.	38	7.8	62.5	29	7.7	64.
14	14	9.5	50.	20	8.7	63.3	14	9.5	62.
15	13	6.5	37.5	22	9.	57.5	....	.. ..	.... ..
17	65	7.	53.3	58	7.4	55.5	48	8.3	56.
18	23	7.	50.	26	9.2	56.5	25	10.5	56.6
19	47	5.8	48.	58	6.6	58.1	26	8.2	55.5
20	....	.. ..	.... ..	....	.. ..	.... ..	....	.. ..	.... ..
21	27	8.1	60.	32	9.2	70.	21	9.5	55.
22	....	.. ..	.... ..	....	.. ..	.... ..	....	.. ..	.. ..
23	21	7.3	60.	31	8.	66.	....	.. ..	.... ..
24	....	.. .	.... ..	....	.. ..	.... ..	....	.. ..	.... ..
25	6	8.	25.	5	9.	50.	5	11.	70.
26	....	.. ..	.... ..	4	7.	70.	6	9.	37.5
27	5	9.	50.	11	8.	56.6	14	10.	60.
28	5	7.	50.	15	8.	52.5	14	10.6	60.
29	4	6.	75.	4	6.	50.	10	6.5	63.3
30	7	8.	80.	13	10.5	60.	13	8.5	57.5
31	12	7.5	54.	11	8.4	55.	6	10.	63.3
32	13	5.	55.	17	6.	40.	20	8.	63.3
33	15	6.6	50.	16	7.5	36.3	12	9.5	63.3
34	14	6.4	50.	10	8.	41.6	5	5.5	50.
35	....	.. ..	.... ..	....	.. ..	.... ..	....	.. ..	.... ..
36	8	9.	60.	5	7.5	83.3	13	8.4	77.5
37	9	7.5	50.	8	9.	50.	21	9.6	53.7
38	16	8.	50.	18	8.6	50.	7	12.	66.6
39	9	8.5	53.3	6	7.	30.	11	11.	65.
40	19	8.	56.6	15	9.	60.	10	10.	65.
41	7	7.5	50.	10	7.	55.	3	8.	50.
42	12	7.5	21.8	7	8.5	55.	12	9.7	70.
43	6	6.	55.	8	7.5	33.3	10	7.	56.6
44	13	9.3	50.	5	8.	37.5	7	9.	50.
45	19	8.2	60.	17	9.5	50.	17	9.5	50.
46	21	7.5	53.3	12	7.8	60.	14	8.5	62.
47	18	7.5	37.5	14	10.2	60.	13	12.3	60.
48	7	7.	65.	5	8.5	70.	9	10.3	60.
49	....	.. ..	.... ..	....	.. ..	.... ..	....	.. ..	.... ..
50	....	.. ..	.... ..	....	.. ..	.... ..	....	.. ..	.... ..
State	1293	7.7	54.3	1217	8.3	59.5	1083	8.9	62.4

TABLE 65 **ARITHMETIC—Subtraction**

No. of school	Grade III			Grade IV			Grade V		
	Number pupils	Speed M.S.	Acc. M.S.	Number pupils	Speed M.S.	Acc. M.S.	Number pupils	Speed M.S.	Acc. M.S.
1	58	3.6	60.	57	6.5	70.	51	7.4	71.4
2	....	.. ..	.... ..	....	.. ..	.... ..	....	.. ..	.... ..
3	36	4.8	45.	52	7.3	53.3	63	7.7	62.2
4	120	5.4	46.1	125	7.3	66.8	158	7.9	58.8
5	30	4.	52.	64	5.1	54.2	123	7.	70.
6	20	3.5	35.5	87	5.5	56.6	62	6.7	82.3
7	83	3.9	40.	60	6.9	66.	88	7.8	65.
8	227	4.3	43.5	262	6.4	55.	233	8.5	71.5
9	....	.. ..	.... ..	135	7.	50.5	121	8.6	79.5
10	....	.. ..	.... ..	7	5.	55.	13	4.6	70.
11	....	.. ..	.... ..	....	.. ..	.... ..	....	.. ..	.... ..
12	....	.. ..	.... ..	22	5.7	63.3	28	7.5	81.4
13	60	3.2	31.2	57	4.7	39.1	45	8.7	71.6
14	11	5.5	70.	11	9.	50.	20	9.2	61.6
15	27	4.	36.8	27	6.4	63.3	41	8.	75.
17	20	3.	31.2	61	8.9	57.5	66	8.4	68.5
18	27	4.	36.8	29	4.8	44.1	26	6.1	55.
19	43	4.1	45.8	24	5.1	56.	27	7.8	52.8
20	....	.. ..	.... ..	....	.. ..	.... ..	....	.. ..	.... ..
21	28	4.7	28.	29	5.6	54.	42	6.6	58.1
22	....	.. ..	.... ..	....	.. ..	.... ..	....	.. ..	.... ..
23	15	4.7	44.4	29	4.8	41.6	17	7.1	72.5
24	....	.. ..	.... ..	....	.. ..	.... ..	....	.. ..	.. ..
25	9	5.2	35.7	6	7.	50.	8	7.6	60.
26	....	.. ..	.... ..	4	5.5	25.	7	9.	50.
27	13	4.6	35.	8	6.5	33.3	8	7.	70.
28	....	.. ..	.... ..	4	6.5	90.	9	12.3	70.
29	5	4.	50.	8	7.3	85.	10	6.5	60.
30	9	3.	50.	16	5.7	62.	13	8.	70.
31	8	4.	50.	23	5.6	60.	25	8.7	56.6
32	....	.. ..	.... ..	16	5.7	36.3	12	6.5	60.
33	14	2.6	29.1	....	.. ..	.... ..	11	8.2	37.5
34	8	4.5	50.	10	5.3	41.6	9	6.6	70.
35	....	.. ..	.... ..	7	7.	70.	6	6.	55.
36	8	4.5	28.5	11	6.	50.	6	11.5	60.
37	15	4.8	28.5	15	4.6	30.7	19	6.8	56.6
38	11	4.6	42.8	14	6.7	43.7	8	5.5	72.5
39	6	5.	25.	8	4.6	33.3	8	6.	40.
40	18	5.2	30.	12	7.	42.8	12	6.6	55.
41	9	3.5	35.7	11	7.6	33.3	9	7.5	55.
42	9	4.6	31.2	9	7.3	55.	10	7.6	60.
43	4	4.	25.	7	6.3	55.	13	6.5	43.7
44	9	6.	50.	6	5.	37.5	4	7.3	33.3
45	11	5.	42.8	9	8.	75.	14	10.	43.7
46	18	5.8	28.6	13	7.	60.	12	8.2	65.
47	15	4.5	30.	22	6.5	32.3	17	7.	45.
48	9	4.3	25.	8	4.3	50.	9	8.	56.6
49	....	.. ..	.... ..	....	.. ..	.... ..	....	.. ..	.... ..
50	....	.. ..	.... ..	....	.. ..	.... ..	....	.. ..	.... ..
State	1013	4.4	39.6	1385	6.2	53.7	1483	7.7	66.1

TABLE 66 **ARITHMETIC—Subtraction**

No. of school	Grade VI			Grade VII			Grade VIII		
	Number pupils	Speed M.S.	Acc. M.S.	Number pupils	Speed M.S.	Acc. M.S.	Number pupils	Speed M.S.	Acc. M.S.
1	37	8.1	72.5	47	9.4	84.5	43	11.4	80.
2	....	.. ..	.... ..	....	.. ..	.... ..	....	.. ..	.... ..
3	40	8.8	64.	....	.. ..	.... ..	....	.... ..	.... ..
4	164	10.	68.3	103	10.4	73.	111	11.4	70.
5	87	7.9	61.7	91	9.7	100.	101	10.2	90.
6	68	8.1	75.3	90	7.9	89.	50	9.8	84.7
7	71	9.2	68.3	67	10.1	71.3	76	10.2	75.3
8	204	9.2	74.4	176	10.5	82.3	164	12.2	79.4
9	94	8.6	73.3	98	10.3	75.4	102	14.2	80.
10	19	8.5	80.	7	8.3	60.	9	9.	90.
11	....	.. ..	.... ..	....	.. ..	.... ..	....	.. ..	.... ..
12	19	8.8	65.	17	7.8	80.	23	11.	70.
13	38	8.3	71.4	44	9.4	83.7	30	10.4	86.
14	14	10.6	65.	20	10.7	70.	14	7.2	65.
15	13	7.8	55.	22	11.2	68.	....	.... ..	.... ..
*									
17	65	7.7	71.6	58	9.8	72.	46	11.	66.
18	23	7.5	80.	27	9.7	74.	26	14.2	83.
19	25	6.4	65.	67	8.	62.	26	9.6	74.3
20	....	.. ..	.... ..	....	.. ..	.... ..	....	.. ..	.... ..
21	26	6.6	36.6	32	8.2	72.	21	11.3	72.6
22	....	.. ..	.... ..	....	.. ..	.... ..	....	.. ..	.... ..
23	21	8.4	70.	31	10.	71.	20	10.5	58.3
24	....	.. ..	.... ..	....	.. ..	.... ..	....	.. ..	.... ..
25	6	13.	50.	5	12.	80.	6	17.	80.
26	....	.. ..	.... ..	4	9.	70.	6	14.	65.
27	5	8.	50.	11	8.	65.	14	9.6	80.
28	6	7.5	85.	15	8.5	44.4	14	10.	70.
29	4	10.5	80.	4	7.5	33.3	10	9.	62.5
30	7	7.8	82.5	13	11.	90.	13	11.	87.5
31	12	8.2	65.	11	12.	80.	6	13.	92.5
32	13	6.2	64.	17	6.5	56.6	20	9.7	65.
33	15	8.	66.	16	8.	36.6	12	9.3	60.
34	11	8.4	63.3	10	8.3	70.	5	8.5	86.6
35	....	.. ..	.... ..	....	.. ..	.... ..	....	.. ..	.... ..
36	8	11.	77.5	5	8.5	86.6	13	12.	95.
37	9	8.3	65.	8	10.3	80.	21	12.	74.2
38	16	8.2	60.	18	10.	82.	7	13.	70.
39	9	9.5	50.	6	9.	60.	11	11.7	72.6
40	19	9.7	65.	15	11.	72.5	10	13.	82.5
41	7	10.5	60.	10	8.	73.3	3	11.	70.
42	12	8.3	55.	7	11.	65.	12	11.	85.
43	6	8.	60.	8	9.5	70.	10	10.5	65.
44	13	11.5	60.	5	12.	60.	7	11.5	65.
45	19	10.3	65.	17	13.3	67.5	17	13.6	67.6
46	21	7.6	63.3	12	9.5	75.	14	9.7	70.
47	18	8.4	72.5	14	12.5	90.	13	13.6	86.
48	7	7.5	60.	5	10.	60.	9	11.3	65.
49	....	.. ..	.... ..	....	.. ..	.... ..	....	.. ..	.... ..
50	....	.. ..	.... ..	....	.. ..	.... ..	....	.. ..	.... ..
State	1260	7.6	68.9	1223	9.8	75.6	1104	11.	72.6

* No. 16 did not send material in.

TABLE 67 **ARITHMETIC—Multiplication**

No. of school	Grade IV			Grade V			Grade VI		
	Number pupils	Speed M.S.	Acc. M.S.	Number pupils	Speed M.S.	Acc. M.S.	Number pupils	Speed M.S.	Acc. M.S.
1	57	4.9	46.6	51	6.	62.	38	6.2	55.
2	....	.. ..	.... ..	....	.. ..	.... ..	....	.. ..	.... ..
3	52	5.2	50.	63	6.6	56.2	40	7.2	62.
4	125	6.4	50.	158	7.	62.5	154	7.7	52.7
5	64	4.1	54.	123	6.1	62.	87	6.6	60.
6	87	5.4	59.2	62	6.4	78.1	68	7.1	68.6
7	54	6.7	60.	87	7.1	55.	71	7.2	65.8
8	262	5.1	55.	234	6.4	67.5	204	8.6	67.5
9	....	.. ..	.... ..	121	7.1	69.	94	7.9	59.5
10	8	5.	40.	15	6.	67.5	24	7.	68.
11	....	.. ..	.... ..	....	.. ..	.... ..	....	.. ..	.. ..
12	22	5.	45.8	28	6.5	65.	19	7.8	60.
13	57	4.4	51.3	46	7.	54.7	38	7.2	57.5
14	13	7.3	53.3	20	6.5	56.6	14	9.6	62.
15	27	6.3	53.3	41	7.	68.3	13	5.5	33.3
*									
17	61	5.	37.8	66	6.6	61.6	65	7.3	56.4
18	30	3.7	35.7	28	5.5	50.	23	6.4	66.6
19	23	4.4	40.	29	6.5	54.	25	6.5	82.2
20	....	.. ..	.... ..	....	.. ..	.... ..	....	.. ..	.... ..
21	29	4.	27.7	42	5.8	48.8	26	6.3	50.2
22	....	.. ..	.... ..	....	.. ..	.... ..	....	.. ..	.... ..
23	29	4.8	46.8	17	7.2	70.	21	6.8	56.6
24	....	.. ..	.... ..	....	.. ..	.... ..	....	.. ..	.... ..
25	6	5.	70.	8	7.	65.	6	8.5	25.
26	4	5.	33.3	7	7.7	60.	....	.. ..	.... ..
27	8	7.	40.	8	5.5	40.	5	6.3	37.5
28	4	5.	60.	9	7.	50.	5	6.5	70.
29	8	6.	70.	10	5.5	35.5	4	7.	50.
30	16	5.	36.3	13	6.6	65.	7	9.	80.
31	23	4.1	70.	25	7.	70.	12	7.	50.
32	16	4.3	40.	12	6.6	53.3	13	6.	80.
33	....	.. ..	.... ..	11	5.7	37.5	15	7.	57.5
34	11	5.	37.5	11	6.6	60.	11	7.5	60.
35	7	7.	50.	6	8.	50.	....	.. ..	.... ..
36	11	6.	42.8	6	10.	63.3	8	12.	83.3
37	15	6.5	50.	19	7.	55.5	9	7.5	63.3
38	14	7.	38.8	8	7.	70.	16	7.7	55.
39	8	5.2	28.5	8	5.	33.3	9	9.5	73.3
40	12	5.5	50.	12	5.7	37.5	19	8.6	56.6
41	11	7.	55.	9	6.	56.6	7	7.5	75.
42	9	5.5	70.	10	5.7	50.	12	7.	63.3
43	7	4.	33.3	13	6.4	55.	6	7.3	60.
44	6	5.	30.	4	6.	25.	13	8.	60.
45	9	8.	55.	14	8.	62.5	19	7.5	45.4
46	13	6.8	70.	12	6.7	50.	21	7.	50.
47	22	6.6	50.	17	6.	50.	18	7.8	57.5
48	8	4.3	28.5	9	5.	70.	7	5.5	66.6
49	....	.. ..	.... ..	....	.. ..	.... ..	....	.. ..	.... ..
50	....	.. ..	.... ..	....	.. ..	.... ..	....	.. ..	.... ..
State	1248	5.2	50.	1492	6.5	59.8	1266	7.4	60.7

* No. 16 seent no aterial in.

TABLE 68 **ARITHMETIC—Multiplication**

No. of school	Grade VII Number pupils	Speed M.S.	Acc. M.S.	Grade VIII Number pupils	Speed M.S.	Acc. M.S.
1	47	7.8	65.5	43	9.5	66.3
2	....	.. ..	.... ..	....	.. ..	.... ..
3	....	.. ..	.... ..	....	.. ..	.... ..
4	103	7.	59.	111	8.9	60.9
5	91	8.2	89.3	101	8.4	93.
6	90	7.1	75.6	50	8.	81.5
7	67	8.9	54.5	60	9.1	73.8
8	179	9.3	74.5	154	11.1	73.8
9	98	9.1	60.	103	11.7	42.
10	5	4.	55.	....	.. ..	.... ..
11	....	.. ..	.... ..	....	.. ..	.... ..
12	17	7.6	62.5	23	9.5	54.
13	44	8.1	62.	29	7.6	68.5
14	20	10.5	63.3	14	9.3	44.7
15	23	9.	66.6	....	.. ..	.... ..
*						
17	58	8.2	62.5	48	9.	68.
18	27	7.8	62.	26	11.7	75.5
19	56	6.6	60.	26	9.	56.6
20	....	.. ..	.... ..	....	.. ..	.... ..
21	32	7.5	65.	21	10.4	72.
22	....	.. ..	.... ..	....	.. ..	.... ..
23	31	8.8	58.	20	12.	70.
24	31	.. ..	.... ..	20	.. ..	.... ..
25	5	14.5	70.	5	15.	65.
26	4	7.5	80.	6	9.7	55.
27	11	9.	63.3	14	9.2	50.
28	15	7.4	52.5	14	10.	66.
29	4	5.6	70.	....	.. ..	.... ..
30	13	14.	70.	13	13.	75.
31	11	6.9	80.	6	11.6	95.
32	17	6.7	68.3	20	9.5	76.6
33	16	7.6	59.5	12	10.5	65.
34	10	9.7	66.7	5	8.3	93.3
35	....	.. ..	.... ..	....	.. ..	.... ..
36	5	9.5	85.	13	12.	88.
37	8	8.5	56.6	20	11.	65.
38	18	18.6	66.6	7	13.	66.6
39	6	8.	55.	11	11.6	60.
40	15	9.5	73.3	10	12.	66.6
41	10	7.	55.	3	8.	60.
42	7	9.	75.	12	10.	60.
43	8	8.3	65.	10	9.	50.
44	5	7.5	50.	7	9.5	65.
45	17	10.1	66.	17	10.1	66.
46	12	9.	70.	14	10.	66.6
47	14	11.	63.3	13	14.	80.
48	....	.. ..	.... ..	9	9.	73.3
49	....	.. ..	.... ..	....	.. ..	.... ..
50	....	.. ..	.... ..	....	.. ..	.... ..
State	1219	8.6	76.1	1070	9.8	73.7

* No. 16 sent no material in.

TABLE 69 **ARITHMETIC—Division**

	Grade IV			Grade V			Grade VI		
No. of school	Number pupils	Speed M.S.	Acc. M.S.	Number pupils	Speed M.S.	Acc. M.S.	Number pupils	Speed M.S.	Acc. M.S.
1	28	4.4	62.	50	4.7	57.7	38	5.	74.4
2	....	.. ..	.... ..	....	.. ..	.... ..	....	.. ..	.... ..
3	62	4.2	39.3	63	4.9	53.3	40	6.3	65.
4	12	6.	65.	167	5.3	49.	154	6.5	62.5
5	53	2.2	31.3	123	4.3	64.5	87	5.6	63.
6	81	3.5	44.	62	5.7	62.5	68	7.	78.7
7	54	4.5	51.2	87	4.8	56.1	71	7.5	67.
8	260	4.4	43.6	235	5.1	73.3	204	6.8	71.3
9	....	.. ..	.... ..	121	4.5	68.1	94	6.2	67.9
10	8	5.	55.	14	3.7	50.	19	6.2	80.
11	....	.. ..	.... ..	....	.. ..	.... ..	....	.. ..	.... ..
12	21	4.7	50.	26	5.7	76.6	19	6.7	74.2
13	12	3.3	31.8	45	5.2	60.	38	5.6	81.1
14	11	4.8	60.	20	3.2	65.4	14	7.3	65.
15	27	5.1	57.5	41	8.	60.	....	.. ..	.... ..
*									
17	60	3.4	58.7	66	5.6	61.1	65	6.3	75.
18	....	.. ..	.... ..	28	3.2	50.	....	.. ..	.... ..
19	26	3.7	30.9	27	7.8	62.8	25	5.1	73.3
20	....	.. ..	.... ..	....	.. ..	.... ..	....	.. ..	.... ..
21	27	2.7	30.9	42	4.	37.5	27	4.	54.
22	....	.. ..	.... ..	....	.. ..	.... ..	....	.. ..	.... ..
23	29	3.2	37.5	17	4.5	72.5	27	4.	54.
24	....	.. ..	.... ..	....	.. ..	.... ..	....	.. ..	.... ..
25	6	3.5	55.	8	6.	85.	6	5.	50.
26	4	3.	33.3	7	5.5	40.	....	.. ..	.... ..
27	8	2.4	40.	8	3.6	33.3	5	5.	50.
28	4	5.3	86.6	9	5.	41.6	5	3.6	65.
29	8	5.2	58.	10	4.5	41.6	4	7.	70.
30	16	4.	60.	13	5.6	80.	7	7.	70.
31	23	4.	60.	25	3.7	56.6	12	4.7	72.5
32	....	.. ..	.... ..	....	.. ..	.... ..	13	6.6	80.
33	....	.. ..	.... ..	11	4.5	33.3	15	4.8	57.5
34	13	4.5	29.1	10	6.	66.6	11	8.4	63.3
35	....	.. ..	.... ..	6	5.5	80.	....	.. ..	.... ..
36	11	3.	37.5	6	5.	50.	8	10.5	80.
37	15	3.	40.	19	4.	65.	9	4.8	60.
38	14	4.3	35.	8	4.5	66.	16	6.	70.
39	8	8.	25.	8	3.5	28.5	9	6.6	63.3
40	12	3.7	50.	12	4.	50.	19	6.3	63.3
41	10	5.	63.3	9	4.	50.	7	7.	50.
42	9	4.	41.6	10	4.7	50.	12	5.3	67.5
43	7	3.6	33.3	13	3.6	43.7	6	5.	75.
44	6	3.2	25.	4	3.5	25.	13	6.	50.
45	9	6.	63.3	14	5.	43.7	19	6.5	75.
46	13	5.1	50.	12	4.3	50.	21	5.	55.
47	22	3.2	36.6	17	4.5	55.	18	5.3	56.6
48	....	.. ..	.... ..	9	5.	70.	7	6.5	65.
49	8	2.4	25.	....	.. ..	.... ..	....	.. ..	.... ..
50	....	.. ..	.... ..	....	.. ..	.... ..	....	.. ..	.... ..
State	989	3.6	42.5	1482	4.9	56.7	1235	6.1	67.4

* No. 16 sent no material in.

TABLE 70 **ARITHMETIC—Division**

No. of school	Grade VII Number pupils	Grade VII Speed M.S.	Grade VII Acc. M.S.	Grade VIII Number pupils	Grade VIII Speed M.S.	Grade VIII Acc. M.S.
1	46	6.1	81.1	43	8.7	81.
2	....	.. ..	.... ..	....	.. ..	.... ..
3	....	.. ..	.... ..	....	.. ..	.... ..
4	103	9.1	70.	111	9.4	73.3
5	91	6.2	93.3	101	8.4	100.
6	90	6.6	87.5	50	9.	100.
7	67	8.2	80.	60	8.7	83.5
8	177	8.4	83.	154	10.4	84.8
9	98	6.7	68.5	103	10.2	90.
10	6	8.	56.6	....	.. ..	.... ..
11	....	.. ..	.... ..	....	.. ..	.... ..
12	17	9.	95.	22	11.	80.
13	44	7.2	75.	29	7.6	90.
14	20	9.	90.	14	10.6	59.5
15	23	9.	92.5	....	.. ..	.... ..
*						
17	56	7.5	75.	47	9.4	67.5
18	27	7.	68.3	26	13.	85.
19	57	5.3	57.7	26	18.3	86.
20	....	.. ..	.... ..	....	.. ..	.... ..
21	32	6.5	64.	20	8.5	75.
22	....	.. ..	.... ..	....	.. ..	.... ..
23	31	7.	78.	....	.. ..	.... ..
24	....	.. ..	.... ..	....	.. ..	.... ..
25	5	10.	76.6	5	9.	80.
26	4	5.	60.	6	11.	70.
27	11	6.	80.	14	8.2	60.
28	15	5.7	66.6	14	9.	90.
29	4	5.	75.	....	.. ..	.... ..
30	13	10.5	70.	13	8.5	100.
31	11	10.	70.	6	16.	90.
32	17	6.	82.5	20	6.7	75.
33	16	6.5	62.	12	7.	70.
34	10	8.7	70.	5	11.	93.
35	....	.. ..	.... ..	....	.. ..	.... ..
36	5	8.3	83.3	13	10.5	100.
37	8	8.3	66.6	21	10.3	76.6
38	18	8.	75.	7	12.	80.
39	6	5.	37.5	11	10.5	85.
40	15	9.	83.3	10	10.	80.
41	10	7.	70.	3	8.	90.
42	7	9.5	60.	13	8.5	81.6
43	8	6.5	75.	10	6.5	70.
44	5	7.	50.	7	7.5	60.
45	17	10.6	70.	17	10.6	70.
46	12	9.5	75.	14	8.	82.5
47	14	12.	90.	13	12.5	85.
48	5	9.	80.	9	11.3	65.
49	....	.. ..	.... ..	....	.. ..	.... ..
50	....	.. ..	.... ..	....	.. ..	.... ..
State	1221	7.7	77.3	1049	9.4	82.5

* No. 16 sent in no material.

TABLE 71 **LANGUAGE**

No. of school	Grade III		Grade IV		Grade V		Grade VI		Grade VII		Grade VIII	
	No.	M.S.	No.	M.S.	No.	M.S.	No.	M.S.	No.	M.S.	No.	M.S.
1	62	18.2	58	28.	51	33.4	39	17.4	51	20.	42	31.6
2	55	18.6	51	26.3	60	34.2	62	14.1	....	.... ..	55	29.5
3	....	.... ..	....	.... ..	....	.... ..	....	.... ..	....	.... ..	....	.... ..
4	123	24.4	123	27.4	160	33.1	151	17.6	104	22.	118	37.1
5	28	20.3	62	24.7	123	30.5	86	18.1	79	25.1	101	28.
6	....	.... ..	....	.... ..	....	.... ..	....	.... ..	....	.... ..	....	.... ..
7	86	22.	60	30.	86	31.8	69	28.7	68	30.1	75	34.5
8	230	18.2	274	26.2	258	31.6	174	30.3	185	27.5	151	34.
9	119	12.3	242	28.5	....	.... ..	88	18.2	99	21.6	105	33.2
10	....	.... ..	....	.... ..	17	33.2	21	11.	....	.... ..	8	39.
11	....	.... ..	....	.... ..	....	.... ..	....	.... ..	....	.... ..	....	.... ..
12	30	12.7	21	17.6	23	31.7	23	21.	17	31.3	21	30.
13	59	14.8	57	22.	45	29.3	38	24.2	44	17.4	30	27.7
14	....	.... ..	....	.... ..	....	.... ..	....	.... ..	....	.... ..	....	.... ..
15	27	19.5	27	25.	41	35.	13	16.5	23	25.2	....	.... ..
17	42	10.3	62	26.	65	30.	64	19.	57	21.6	47	30.
18	25	14.	30	24.5	27	27.7	22	12.5	27	21.	26	30.7
19	....	.... ..	....	.... ..	....	.... ..	....	.... ..	....	.... ..	....	.... ..
20	....	.... ..	....	.... ..	....	.... ..	....	.... ..	....	.... ..	....	.... ..
21	28	8.3	....	.... ..	42	24.2	27	14.2	....	.... ..	....	.... ..
22	....	.... ..	....	.... ..	....	.... ..	6	14.	3	30.	5	46.
23	14	21.8	28	30.5	17	35.	21	12.	31	25.	20	33.
24	29	14.	22	30.4	28	31.2	11	31.3	26	31.2	12	44.3
25	9	17.	6	22.5	8	32.	6	18.5	4	29.5	6	22.5
26	....	.... ..	4	17.	7	27.	....	.... ..	4	27.5	6	19.8
27	13	16.	7	21.	8	33.4	5	21.	10	21.7	14	22.5
28	11	13.5	7	21.	9	32.	5	24.	14	17.6	12	24.7
29	4	10.5	....	.... ..	9	27.	5	24.	....	.... ..	....	.... ..
30	10	17.	16	29.6	13	34.6	8	31.	11	31.5	12	26.2
31	....	.... ..	....	.... ..	....	.... ..	....	.... ..	....	.... ..	....	.... ..
32	....	.... ..	....	.... ..	....	.... ..	....	.... ..	....	.... ..	....	.... ..
33	....	.... ..	....	.... ..	9	21.	16	19.5	11	19.5	14	33.2
34	10	17.	12	21.2	9	28.	11	19.2	9	21.	4	25.5
35	10	22.5	7	28.	6	36.	6	15.6	11	24.	2	22.5
36	7	14.	10	21.7	5	34.	8	30.5	5	25.2	13	36.
37	15	12.7	15	24.	14	26.3	15	10.	8	14.	21	25.5
38	9	15.	11	24.	6	38.7	13	9.4	12	22.5	4	28.
39	6	7.5	8	17.5	8	23.5	9	20.7	6	14.5	11	28.
40	21	18.6	12	22.5	12	32.	17	19.5	19	22.5	11	28.
41	9	20.3	12	22.8	8	29.3	7	21.8	10	17.	3	24.
42	9	13.3	10	29.5	10	27.6	12	11.	7	21.	12	26.2
43	4	9.	7	14.	13	22.5	6	9.	8	19.5	10	28.5
44	10	22.5	5	24.	3	30.	....	.... ..	5	10.	7	18.
45	10	22.5	9	28.3	14	33.	....	.... ..	16	18.5	15	30.
46	18	20.3	13	30.	12	26.3	21	19.5	12	21.8	14	32.
47	15	16.	22	24.5	18	26.3	17	13.5	14	31.	14	31.2
48	8	24.8	9	27.	9	32.	7	12.	9	38.	5	21.
49	9	16.	13	21.	4	28.5	3	21.	4	22.	3	21.
50	....	.... ..	....	.... ..	....	.... ..	....	.... ..	....	.... ..	....	.... ..
State	1174	16.1	1332	24.1	1257	31.2	1112	18.7	1024	23.8	1029	30.7

TABLE 72 **READING**

No. of school	Grade III		Grade IV		Grade V		Grade VI		Grade VII		Grade VIII		Grade IX		Grade X		Grade XI		Grade XII	
	No.	M.S.	No.	M.S.	No.	M.S.	No.	M.S.	No.	M.S.	No.	M.S.	No.	M.S.	No.	M.S.	No.	M.S.	No.	M.S.
1	62	8.	58	11.9	24	17.1	39	18.6	47	2.2	42	23.1	....	.... ..	....	.... ..	....	.... ..	....	.... ..
2	55	6.	52	10.5	59	13.5	61	13.	....	.... ..	57	19.7	63	18.5	67	25.3	55	25.7	33	33.
3	....	.. ..	....	.... ..	....	.... ..	....	.... ..	....	.... ..	....	.... ..	....	.... ..	....	.... ..	....	.... ..	....	.... ..
4	125	8.3	121	9.7	161	14.4	150	14.1	27	15.7	24	16.4	....	.... ..	....	.... ..	....	.... ..	....	.... ..
5	29	6.2	67	9.4	126	12.6	88	16.3	87	18.	105	15.6	70	22.9	58	23.8	69	25.7	32	25.1
6	72	7.8	74	12.5	63	16.	68	21.9	92	20.3	49	22.1	32	25.7	8	25.	....	.... ..	....	.... ..
7	87	5.4	62	10.8	88	13.7	68	15.3	64	17.8	74	16.1	....	.... ..	....	.... ..	....	.... ..	....	.... ..
8	269	6.1	262	9.1	264	14.9	181	18.6	163	19.5	148	41.1	124	23.2	68	27.6	46	26.6	27	28.
9	130	5.4	120	9.7	....	.... ..	94	12.5	98	16.6	104	16.3	....	.... ..	....	.... ..	40	27.3	32	26.7
10	....	.. ..	10	12.6	20	15.9	25	19.5	8	17.5	10	19.5	15	19.5	12	21.3	10	23.	8	31.5
11	....	.. ..	....	.. ..	....	.... ..	....	.... ..	.....	.... ..	....	.... ..	....	.... ..	....	.... ..	....	.... ..	....	.... ..
12	28	6.1	....	.... ..	30	15.5	19	18.	17	19.2	24	16.5	15	25.	16	23.2	7	30.	6	37.5
13	59	5.5	54	11.	121	11.5	38	11.6	44	13.5	30	15.7	21	21.	20	28.1	15	23.	13	24.7
14	....	.. ..	....	.... ..	....	.... ..	....	.... ..	....	.....	....	.... ..	13	27.	5	30.	6	27.8	6	32.5
15	37	4.7	38	10.	30	20.4	13	12.3	23	18.5	....	.... ..	....	.... ..	....	.... ..	....	.... ..	....	.... ..
17	43	4.5	60	8.1	68	15.5	69	15.5	59	18.	49	18.7	....	.... ..	....	.... ..	....	.... ..	....	.... ..
18	25	2.2	28	8.	25	12.	20	12.	26	21.7	27	21.6	26	19.	17	27.	16	26.2	12	26.2
19	....	.. ..	....	.... ..	....	.... ..	....	.... ..	....	.... ..	....	.... ..	....	.... ..	....	.... ..	....	.... ..	....	.... ..
20	49	5.3	33	11.	32	15.3	28	17.5	31	18.	37	20.	....	.... ..	....	.... ..	....	.... ..	....	.... ..
21	29	3.	29	11.4	40	12.1	....	.... ..	33	11.	19	22.2	....	.... ..	....	.... ..	....	.... ..	....	.... ..
22	....	.. ..	....	.... ..	....	.... ..	....	.... ..	....	.... ..	....	.... ..	....	.... ..	....	.... ..	....	.... ..	....	.... ..
23	14	6.	29	9.8	16	13.9	21	13.	31	16.2	20	24.5	....	.... ..	....	.... ..	....	.... ..	....	.... ..
24	32	1.6	23	11.	30	12.3	11	14.5	27	15.	12	20.2	16	22.5	6	24.	5	18.	9	30.
25	9	5.	5	7.5	8	16.1	6	14.	5	13.	4	22.8	5	24.	3	27.	3	28.5	6	33.5
26	....	.. ..	3	8.	7	16.	....	.... ..	4	10.	6	24.	11	22.5	1	11.	....	.... ..	....	.... ..
27	13	3.6	8	5.5	8	7.3	5	9.	11	15.	14	16.	5	11.	3	18.	4	23.2	....	.... ..
28	14	7.7	5	13.	9	15.	5	15.	14	19.	14	22.5	7	25.5	....	.... ..	....	.... ..	6	30.8
29	4	5.5	....	.... ..	10	12.6	4	18.7	....	.... ..	....	.... ..								
30	9	6.	17	14.	12	21.6	8	13.	....	.... ..	12	20.								
31	18	6.	22	9.9	25	14.2	13	13.5	12	17.5	6	17.1								
32	11	6.3	15	13.5	13	14.3	14	8.8	18	12.5	21	24.8								
33	15	1.3	14	5.7	9	12.	14	14.6	14	9.9	13	16.								
34	12	5.5	10	11.2	8	9.5	11	14.5	7	18.	3	18.								
35	10	6.3	7	10.	6	14.	6	14.5	11	9.	....	.... ..								
36	6	4.	9	9.	5	11.	4	18.7	5	24.	14	26.5								
37	15	4.	15	7.	14	12.2	15	12.3	8	18.5	21	15.								
38	10	3.	16	6.2	8	13.3	13	9.	18	16.1	7	14.3								
39	6	2.7	8	6.	8	11.3	9	10.3	7	19.5	10	18.3								
40	19	6.4	11	7.	12	13.2	14	11.9	17	16.	8	22.1								
41	9	6.	12	8.9	8	13.5	8	13.7	10	12.6	3	21.								
42	8	6.5	10	9.3	11	7.	12	10.6	7	19.5	12	19.5								
43	4	2.2	7	4.6	13	8.5	6	8.5	8	14.	10	18.5								
44	9	5.	6	8.	4	13.9	13	11.	5	13.	7	16.5								
45	10	6.6	10	12.	14	18.2	19	12.1	16	15.5	15	21.	4	12.5	3	35.	....	.... ..	....	.... ..
46	18	6.5	13	13.	12	9.5	21	16.1	12	13.	13	16.3								
47	15	3.	22	14.	18	13.3	17	13.6	13	20.2	13	24.								
48	9	5.	8	10.	9	15.	7	14.	9	19.5	5	15.								
49	9	4.	13	7.	4	14.	3	13.	4	16.5	3	15.								
50	....	.. ..	7	5.	2	4.	....	.... ..	....	.... ..	....	.... ..								
State:	1407	5.6	1394	10.1	1454	13.9	1240	14.5	1112	17.1	1065	16.3	428	20.5	286	25.3	276	25.9	190	28.1

* No. 16 did not send in material.

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